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**Federal Aviation
Administration**

Federal Aviation Regulations

Part 135
Air Taxi Operators and Commercial Operators

Revised
December 1, 1978

Consolidated Reprint
This consolidated reprint
incorporates:
Changes 1 through 32
As of 4/6/89

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PART 135

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Introductory Note

Part 135, Revised December 1, 1978, is codified under Subchapter G, Air Carriers, Air Travel Clubs, and Operators For Compensation or Hire: Certification and Operations, of Title 14 of the CODE OF FEDERAL REGULATIONS.

This Revised Part 135 was published as Part V in the Federal Register on October 10, 1978 (43 FR 46742).

Also effective with Revised Part 135, Special Federal Aviation Regulation 23, Airworthiness Standards; Small Airplanes Capable of Carrying More Than 10 Occupants, is hereby deleted effective December 1, 1978. Special Federal Aviation Regulation 30, Ground Proximity Warning System and Special Federal Aviation Regulation 33, Flight Recorders and Cockpit Voice Recorders, are revoked effective December 1, 1978.

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Revision of Part 135

Air Taxi Operators and Commercial Operators

Adopted: September 26, 1978 Effective: December 1, 1978

(Published in 43 FR 46742, October 10, 1978)

SUMMARY: These amendments substantially revise requirements for operations by persons holding air taxi/commercial operator (ATCO) operating certificates issued by the FAA. They will result in a higher level of safety and greater operational flexibility. They are necessary to keep the FAA's regulation of this vital segment of the industry consistent with the state-of-the-art from both a technological and operating standpoint. These amendments respond to the demand for commuter and air taxi operators to operate larger and more complex aircraft.

FOR FURTHER INFORMATION CONTACT:

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SUPPLEMENTARY INFORMATION:

HISTORY

These amendments are based on Notice of Proposed Rulemaking 77-17 (42 FR 34390; Aug. 29, 1977). Notice 77-17 also included five proposed amendments to current Part 135 originally proposed in Notice 76-28 (41 FR 56280; Dec. 27, 1976). Notice 77-17 also considered and disposed of the petition of Air Illinois, Inc., Golden West Airlines, Inc., and Swift Aire Lines, Inc., to amend Part 135 (Docket No. 15733).

After Notice 77-17 was issued, Notice 77-17A (42 FR 56702; Oct. 27, 1977) withdrew proposed § 135.169(e). The same day, Advance Notice of Proposed Rulemaking 77-25 (42 FR 56702; Oct. 27, 1977) requested comments on possible changes in the certification requirements for certain small airplanes used by air taxi operators and commercial operators. Advance Notice 77-25 will be disposed of in a separate rulemaking action.

All interested persons have been given an opportunity to participate in the making of these amendments and due consideration has been given to all matters presented. Except for the changes discussed below, these amendments and the reasons for their adoption are the same as those stated in Notices 76-28 and 77-17.

PUBLIC PARTICIPATION

The FAA completed the last general upgrading of Part 135 in Amendment 135-12 issued on November 26, 1969 (34 FR 19130; Dec. 3, 1969). That amendment took effect on April 1, 1970. Operating experience and changes in the air taxi industry soon required another effort to further improve Part 135. The FAA began working on a project to propose further regulatory changes in May 1972. By the spring of 1976, the basic drafting of this massive project to amend Part 135 was finished. That draft included recommendations the National Transportation Safety Board made in its "Air Taxi Safety Study" of September 27, 1972. The draft also included proposals received during the Operations Review Program that was announced in February 1975.

During a "listening session" with the Commuter Airline Association of America on June 8, 1976, a review conference was suggested to receive ideas from anybody who had an interest and that those ideas be used in developing a notice of proposed rulemaking to amend Part 135. Because of the merit of that suggestion, the FAA prepared proposals which served as a basis for discussions at the conference. Notice 76-18 announcing the Part 135 Regulatory Review Conference was issued on September 9, 1976 (41 FR 38778; Sept. 13, 1976).

The conference was held at Denver, Colo., for 4 days beginning November 8, 1976. More than 400 persons attended the conference and 112 proposals were discussed. More than 100 written comments were received subsequent to the conference. After reviewing the conference transcripts and the written comments and suggestions, changes were made to conference proposals. Many were withdrawn, others were substantially modified and several new proposals were developed.

Notice 77-17 was issued on August 19, 1977. Comments were requested by November 28, 1977. More than 1,600 comments were received and numerous changes are made in response to them. They are discussed in detail below.

The revision and upgrading of Part 135 is the largest, most complex safety rulemaking project that the Federal Aviation Administration has ever undertaken. We wish to acknowledge and express our appreciation for the participation of, and assistance from, members of the public, individual pilots, mechanics, flight attendants, and other aviation personnel, individual ATCO certificate holders, consumer interest groups, labor organizations, air taxi and commuter industry organizations, State governments, State and Federal legislators, manufacturers, the military services, transportation organizations, other agencies of the Federal Government and others too numerous to mention. Each commenter made our product better and the rules more workable.

REASONS FOR REVISING PART 135

The primary objective of this revision of Part 135 is to upgrade the level of safety for operations conducted by commuter air carriers,[1] on-demand air taxi operators and commercial operators. While the comments on each rule are discussed later in this preamble, the principal reasons for this action are summarized here.

First, in recent years the commuter air carrier industry has become an increasingly important part of the Nation's air transportation system. These carriers have experienced a strong 10.3 percent average annual passenger traffic increase since 1970. Most recently, Civil Aeronautics Board statistics for 1977 compared to 1976 show the number of passengers carried by commuters increased 16.5 percent to 8.5 million, passenger miles increased 22.8 percent to 946.2 million and passenger markets served increased 12.9 percent to 1,594. One factor contributing to the increase is growing public acceptance of this segment of the industry. Another factor is a decline in the service to the smaller cities rendered by trunk and local service air carriers. Since 1960, these carriers have discontinued service to 179 points. The commuter air carriers have stepped in and provided service at 96 of these points. Many commuter passengers connect with trunk, regional and local service air carriers. They expect to travel at a level of safety substantially similar to Part 121, the safety rules applicable to air carriers. This revision of Part 135 provides that level of safety.

Second, in the National Transportation Safety Board's "Air Taxi Safety Study," the Board analyzed accidents involving Part 135 certificate holders. That study included specific recommendations from the Board to the FAA intended to upgrade safety in Part 135. The Board's recommendations were considered and many were included in Notice 77-17. There has been some improvement in the Part 135 accident rate since the Board completed its 1972 report. The Board's statistics show that the fatal accident rate for each 100,000 hours flown still remains higher than the rate achieved by certificated route air carriers under Part 121. Indeed, in 1976 the air taxi fatal accident rate increased significantly from the 1975 rate. The Board's preliminary statistics for 1977 indicate that the fatal accident rate remains above the 1975 rate. This revision of Part 135 should reduce the accident rates in air taxi operations.

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[1] Under § 298.2(f) of the Civil Aeronautics Board (CAB) regulations (14 CFR 298.2(f)), "'Commuter air carrier' means, an air taxi operator which (1) performs at least five round trips per week between two or more points and publishes flight schedules which specify the times, days of the week, and places between which such flights are performed, or (2) transports mail by air pursuant to contract with the United States Postal Service."

Third, many Part 135 certificate holders have pointed up a need for greater operational flexibility in the size of aircraft they operate under Part 135. The new rule raises the Part 135 size limit to aircraft having a maximum passenger seating configuration of 30 seats or less and a maximum payload capacity of 7,500 pounds or less. This is the same size aircraft which certificate holders have been able to operate under the blanket exemption authority of Part 298 of the Economic Regulations of the Civil Aeronautics Board (14 CFR Part 298). This increase allows certificate holders to operate larger and more complex aircraft capable of flying higher and faster with increased passenger loads. In turn, this should result in greater productivity. Revised Part 135 adopts the changes necessary to deal with the operation of these larger, more complex aircraft. The FAA is aware that the CAB is considering changes to the aircraft size limits under Part 298 to 60 seats and 18,000 pounds payload capacity. Aircraft operating within these capacity levels are already covered by Part 121. To date, there has been no showing that there is any requirement for the FAA to hold the operation of these aircraft to a lesser standard. The FAA will continue to monitor the commuter/air taxi operating environment and, if a reasonable case is found for some changes as a result of the CAB's proposed amendments, an appropriate rulemaking proceeding will be initiated.

Fourth, since 1969 when Part 135 was last upgraded, there has been substantial increase in the number of certificate holders conducting operations in small airplanes carrying 10 or more passengers and in multiengine turbine-powered airplanes. For example, in the 12-month period ending June 30, 1977, the number of turbine-powered aircraft operated by commuter air carriers grew 61.7 percent from 225 to 364. A characteristic of the air taxi business is that operations are conducted to a broad spectrum of airports ranging from remote, infrequently used airports, to those which are high density air carrier facilities. Aircraft operated under Part 135 must be adequately equipped and maintained and pilots must be properly trained to meet these varied circumstances.

HIGHLIGHTS OF REVISED PART 135

A major goal of this revision of Part 135 is to provide the passenger traveling on an on-demand air taxi flight or a commuter air carrier flight with a level of safety comparable to Part 121, considering the differences between these operations, the costs versus benefits and the overall feasibility of implementation. Balancing the safety considerations, the public interest, the economic consequences, and the feasibility of the rule requires that hard judgments be made. One of these judgments is whether to apply the upgraded standards equally to all aircraft types and all operations. The extensive public comment received by the FAA plus the FAA's own experience has shown this not to be practicable. The complexity of the problem stems in large measure from the varied nature of the aircraft operated and markets served by the commuter/air taxi market. To give but one example, there are approximately 25 and 118 aircraft types, respectively, operated by commuters and on-demand operators. This compares to approximately 13 aircraft types being operated by the trunk and local service carriers. In recognition of these facts, the FAA has designed a rule which, where possible, takes account of the varied nature of the Part 135 operations.

Since both commuter and air taxi operations are governed by Part 135, it is useful to analyze the safety impact on these two different types of operations separately. Focusing on the commuter air carrier, largely because of the scheduled nature of the operator's service and its increasingly important role as a replacement carrier for local service and trunk carriers, the significant safety impact of this rule is readily apparent. Commuters account for over 68 percent of all the revenue passenger miles (RPMs) operated by Part 135 certificate holders.

Based upon the FAA's analysis of RPMs operated by commuters in 1976, the FAA has determined that under this rule approximately 75 percent of the RPMs flown by commuters will be in aircraft having either weather radar or thunderstorm detection equipment. Approximately 97 percent of the total RPMs flown by commuters will be in aircraft flown by a pilot in command having an air transport pilot certificate. To give but one other example, 67 percent of the commuter RPMs will be in aircraft maintained to Part 121 type maintenance programs. The remaining 33 percent, all involving aircraft of nine or less seats, will be subject to more stringent maintenance programs than currently required. As the commuters continue to upgrade and modernize their fleets, these percentages will likely increase. A chart illustrating the impact of this safety upgrade is set forth in Appendix A.

There are many factors that lead to differences in impact levels between the various rule changes. One of the principal reasons is the distinction in the final rules between aircraft capable of carrying 10 or more passengers and those capable of transporting only nine or less passengers. In each instance, the FAA has taken into account the relative complexity of the aircraft from an operational and maintenance standpoint with a view toward achieving levels of safety equal to Part 121 to the maximum extent possible. The 10-passenger seating configuration point differentiation represents the FAA's best judgment, after considerable study, of the most realistic point at which to design differing standards.[2]

It is significant to note the increasing trend in the use of higher capacity aircraft. In 1976, commuter air carriers operated 344 airplanes having 10–30 seats. In 1971, only 175 airplanes having 10–30 seats were operated by commuter air carriers. This represents a 97-percent increase between 1971 and 1976.

Turning to individual items, revised Part 135 requires aircraft that are type certificated for 10 or more passenger seats to be maintained under a continuous airworthiness maintenance program similar to that required under Part 121. Aircraft that are type certificated for nine or less passenger seats will be maintained under a maintenance program upgraded from present standards.

The rule upgrades training, testing, and proficiency requirements to ensure that passengers on aircraft operated under Part 135 are flown by well qualified crewmembers.

Under this rule, a ground proximity warning system (GPWS), or an approved alternate system, is required on turbojets capable of carrying 10 or more passengers. These airplanes descend rapidly if attitude control is inadvertently neglected. They do not recover as quickly as propeller-driven airplanes because of the relatively slow response of the jet engine to throttle settings for increased power. In this connection, the FAA is emphasizing installation of a visual approach slope indicator (VASI) system on all runways with a non-precision approach. This system should materially reduce the number of accidents occurring during landing approaches.

Revised Part 135 requires a shoulder harness for each pilot crewmember on all turbojets and all aircraft capable of carrying 10 or more passengers. The FAA has found this to be an important safety feature. However, the rule makes allowance for the serious retrofit problems encountered on smaller aircraft. In addition, § 91.33(b)(13) requires a shoulder harness for each front seat of small civil airplanes manufactured after July 18, 1978. Thus, new airplanes capable of carrying less than 10 passengers coming into service under Part 135 will be equipped with shoulder harnesses when delivered by the manufacturer.

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[2] It might be argued that some operators could remove one or two seats from aircraft that carry slightly more than the 10 passengers to avoid the otherwise applicable regulations. This is unlikely to present a problem for at least two reasons: (1) There are only 11 aircraft types that have 10 or 11 seats as a standard configuration, so seat removal is a relatively limited possibility; and (2) seat removal precludes the realization of aircraft's full productivity potential and results in a significant economic penalty to the operator.

A third attitude gyro is required on all turbojets because of the performance characteristics of those airplanes. Requiring this instrument on turbopropeller airplanes was considered, but that was found to be unnecessary because immediate information showing loss of attitude control is less important for turbopropeller airplanes.

Operational flexibility has been enhanced in the rule. One example is that ATCO certificate holders will be allowed to operate larger aircraft under the rules of Part 135. Another example is the provision for a minimum equipment list for multiengine aircraft which will increase schedule reliability and decrease out of service time.

Finally, under the rules of the Federal Election Commission (FEC), a candidate in a Federal election must pay for carriage in an aircraft (11 CFR Chapter 1). Ordinarily, receipt of payment for carriage is an operation for compensation or hire and requires a Part 135 certificate. However, carriage of candidates is infrequent and the operator does not intend to engage in the business of an air carrier or commercial operator. This carriage would not be subject to revised Part 135 if (1) the principal business of the operator is not as an air carrier or commercial operator, and (2) the payment for the carriage is required by the FEC rules.

Revised Part 135 does not require a flight data recorder (FDR). Requirements for a cockpit voice recorder (CVR) and ground proximity warning system (GPWS) apply to turbojets capable of carrying 10 or more passengers. In its letter of April 13, 1978, to the Administrator, the National Transportation Safety Board recommended new standards be developed for the FDR and CVR. Two of the Board's three specific recommendations were as follows:

Develop, in cooperation with industry, flight recorder standards (FDR/CVR) for complex aircraft which are predicated upon intended aircraft usage.

Draft specifications and fund research and developments for a low cost FDR, CVR, and composite recorder which can be used on complex general aviation aircraft. Establish guidelines for these recorders, such as maximum cost, compatible with the cost of the airplane on which they will be installed and with the use for which the airplane is intended.

The FAA is developing proposed rules to carry out the Board's recommendations. The Board also recommended that, until new standards are developed, turbine-powered aircraft capable of carrying six or more passengers which must have two pilots, be required to have a CVR. The current FAA study of revising the Part 91 rules for general aviation operations will consider this recommendation. This is a more appropriate forum since it will have broader applicability and is more generally geared to the aircraft requirements. Because of this, the FAA concludes that the public interest is served best by not requiring an FDR under Part 135 at this time and by requiring a CVR on turbojets capable of carrying 10 or more passengers.

PROPOSALS WITHDRAWN OR DEFERRED

In response to comments received on Notice 77-17, three proposed sections to Part 135 have been withdrawn completely. One proposal, flight and duty time regulations, is being deferred for reasons discussed below.

PERIODIC FINANCIAL STATUS REVIEW (PROPOSED § 135.37)

The more than 80 commenters on this proposed rule were almost unanimously opposed. They believe that FAA has neither the right nor the justification to periodically examine their books. They are concerned that the financial information acquired during this review would be released to the public under the Freedom of Information Act. Upon further consideration, the FAA has determined that a periodic review of an operator's financial records is not necessary. The FAA has general authority to conduct surveillance and investigations under the Federal Aviation Act, and may secure access to any records (including financial records) of an operator when necessary to carry out its safety responsibilities [§§ 313(a), 601(a)(6), and 604(a) of the Federal Aviation Act (49 U.S.C. 1354(a), 1421(a)(6), and 1424(a))]. This specific rule is not required and therefore it is withdrawn.

FLIGHT INFORMATION: FACILITIES AND SERVICES (PROPOSED § 135.51)

Nearly all commenters oppose this proposed rule. It was based on § 121.603 which is among the dispatch and flight release rules in Subpart U of Part 121. There are no dispatch or flight release requirements in revised Part 135. Therefore, proposed § 135.51 is withdrawn.

HELICOPTER OPERATIONS: EMERGENCY LANDING AREAS

(CURRENT § 135.89)

The Helicopter Association of America (HAA) petitioned the FAA to revoke this section. HAA argues that the rule discriminates against helicopters because the minimum safe altitude requirements in § 91.79 apply to all aircraft including helicopters. Notice 77–17 proposed to revoke current § 135.89 and no opposing comments were received. Current § 135.89 is no longer necessary and is revoked.

FLIGHT AND DUTY TIME REGULATIONS

(PROPOSED SUBPART F)

An entire subpart dealing with flight crewmember flight and duty time limitations has been deferred for further consideration while the rulemaking proposed in Notice 78–3 is completed. That Notice proposed changes in flight and duty time limitations governing Parts 121 and 123 operators. Since many of the concepts presented in Notice 78–3 are similar to those proposed in Notice 77–17, information received in response to Notice 78–3 will be helpful to the FAA in completing the Part 135 flight and duty time limitations rulemaking action. In view of the deferral, the present regulation is retained.

REGULATORY ANALYSIS

This revision imposes on all Part 135 operators more stringent operating requirements. They are similar in certain respects to those being met by Part 121 operators or by air taxi operators and commuter air carriers operating under § 135.2. The FAA has undertaken an extensive analysis to determine the monetary impact of the final rule. Careful attention was paid to determining alternative methods of achieving equivalent levels of safety with a view toward the cost impact of the alternatives. The analytical process is presented in Appendix B and the full study is in Docket 16097.

After factoring out the deferred flight time and duty regulations, the initial cost of equipment, manuals, programs, and other new requirements, plus annual recurring cost of the NPRM, less revenue offsets was $52,483,000. A comparable figure for the final rule is $33,398,000. Thus, the analysis performed after the receipt of public comment on the Notice pared $19,085,000 from the impact of the rule. This is a 36-percent cost reduction. This cost will be spread over approximately 2,200 commuter/air taxi operators who operate 9,498 airplanes. It must be kept in mind that the various public steps which led up to the Notice, and which were detailed above, had already helped focus the FAA on the most cost effective methods of achieving the needed safety levels.

The cost savings between the Notice and the final rule are primarily from adjustments to the proposed requirements as to periodic financial reviews, management personnel, weather reports and forecasts and IFR requirements, and operations in icing conditions. These comparisons are shown in Table I.

REVIEW OF REVISED PART 135

The FAA will announce an evaluation of revised Part 135 early in 1980. By then, more than 1 year will have passed since these amendments take effect. The review will enable the public to discuss any problems relating to the implementation and application of the revised Part. Ways to further improve the rules also will be discussed. In addition, comments submitted on Notice 77–17 which could not be considered within the scope of that Notice can be raised during this discussion. This action is in keeping with the spirit of Executive Order 12044, "Improving Government Regulations" (43 FR 12661; Mar. 24, 1978).

TABLE I

RESULTS OF COST IMPACT ASSESSMENT: FINAL RULE VERSUS NPRM 77-17 (MEAN VALUES)
($000)

Item No.	Rule Section No.	NPRM Section No.	Section Title	Total Cost Final Rule Basis	Total Cost NPRM Basis	Difference
1	135.2	(135.2)	Air Taxi Operations with Large Aircraft	-120	-120	0
2	135.21	(135.23)	Manual Requirements	1,819	1,819	0
3	Deleted	(135.37)	Periodic Financial Status Review	0	2,354	2,354
4	135.37, .39	(135.39, .41)	Management Personnel Required and Qualifications	9,581	15,690	6,109
5	135.63	(135.49)	Recordkeeping Requirements	3/	3/	
6	135.65	(135.53)	Reporting Mechanical Irregularities	526	526	0
7	135.69	(135.57)	Restriction or Suspension of Operations: Continuation of Flight in an Emergency	1,595	1,595	0
8	135.75	(135.63)	Inspection Credentials: Admission to Pilots Compartment: Forward Observers Seat	200	332	132
9	135.87,	(135.75)	Carriage of Cargo Including Carry on Baggage	697	697	0
10	135.89, .157	(135.77, .129)	Pilot Requirements: Use of Oxygen and Oxygen Equipment Requirements	0	385	385
11	135.97	(135.85)	Aircraft and Facilities for Recent Flight Experience	29	29	0
12	135.149, .151, .153	(135.125)	Equipment Requirements: General and Cockpit Voice Recorders and Ground Proximity Warning System	1,350	1,890 1/	540
13	135.155	(135.127)	Fire Extinguishers: Passenger-Carrying Aircraft	0	167	167
14	135.165	(135.137)	Radio and Navigation Equipment: Extended Overwater or IFR Operations	323	323	0
15	135.167	(135.139)	Emergency Equipment: Extended Overwater Operations	3	3	0
16	135.171	(135.143)	Shoulder Harness Installation at Flight Crewmember Stations	201	201	0
17	135.173	(135.145)	Airborne Thunderstorm Detection Equipment Requirements	1,410	1,410	0
18	135.177	(135.147)	Emergency Equipment Requirements for Aircraft Having a Passenger Seating Configuration of More than 19 Passengers	0	0	0
19	135.179	(135.149)	Inoperable Instruments and Equipment for Multi-Engine Aircraft	16	16	0
20	135.213, .225	(135.171, .185)	Weather Reports and Forecasts and IFR: Takeoff, Approach and Landing Minimums	11,301	17,744	6,443
21	135.215	(135.175)	IFR: Operating Limitations	-2,133	-2,133	0
22	135.219	(135.179)	IFR: Destination Airport Weather Minimums	-2,140	-2,140	0
23	135.223	(135.183)	IFR: Alternate Airport Requirements	-544	-544	0
24	135.227	(135.187)	Icing Conditions: Operating Limitations	0	2,015	2,015
25	135.243	(135.193)	Pilot in Command Qualifications	485	485	0
26	135.245	(135.197)	Second in Command Qualifications	400	1,340	940
27	135.261	(135.200-.219)	Flight and Duty Time Limitations	2/	2/	
28	135.293	(135.225)	Initial and Recurrent Pilot Testing Requirements	-2,191	-2,191	0
29	135.297	(135.229)	Pilot in Command: Instrument Proficiency Check Requirements	-294	-294	0
30	135.299	(135.231)	Pilot in Command: Line Checks: Routes and Airports	586	586	0
31	135.321-.351	(135.237-.267)	Training	2,986	2,986	0
32	135.411-.443	(135.333-.365)	Maintenance, Preventive Maintenance, and Alterations	7,332	7,332	0
	TOTAL			33,398	52,483	19,085

1/ These costs are from a special "off-line" analysis because the sample of small air taxi operators did not include operators of affected turbojet aircraft.

2/ Flight and duty time limitation and associated recordkeeping deferred for further rulemaking action. See discussion in accompanying text.

3/ Major cost impacts in recordkeeping relate to flight and duty time and are, therefore, deferred. Other cost impacts are negligible.

NOTE: For a discussion of the derivation and additional analyses of these estimates, see the Regulatory Analysis appendix to this preamble.

FORM OF REVISED PART 135
SECTION NUMBERS

Revised Part 135 sections are renumbered so this Part is consistent with the form of other Federal Aviation Regulations. In the following discussion of comments, the section number assigned in this revision is the one used. The section numbers in this revision differ from the numbers proposed for those sections in Notice 77-17 in almost every instance. So that readers may refer back to discussion in the preamble to Notice 77-17, the obsolete proposed section numbers are cited parenthetically after the new section number and title in the discussion that follows. A reference table is published at the end of the Part which shows each section in the revised Part and the comparable section in the current Part.

EDITORIAL CHANGES

In adopting this revision of Part 135, the drafters carefully reviewed the rule for both clarity and internal consistency. The rule has been extensively edited to improve it without changing substance. Nonsubstance editorial changes are not discussed in the preamble. Clarifying changes are indicated where that is appropriate. In addition, the rule was extensively revised to eliminate personal pronouns indicating gender.

OTHER CHANGES

In addition to these editorial changes, the rule contains some changes that were not discussed in Notice 77-17. These changes were made in the spirit of Executive Order 12044, "Improving Government Regulations," and the Department of Transportation implementing policies and procedures (43 FR 9582; Mar. 8, 1978). The reasons for each change are detailed in the following discussion. Because these changes are necessary for safety, are in the public interest, clarify the rules proposed, or relax a burden, I find that notice and public procedure are not necessary and good cause exists for adopting them in this revision of Part 135.

DISCUSSION OF COMMENTS

Several sections are merely redesignated from current Part 135. Comments were not requested on these redesignated sections. Other sections that Notice 77-17 proposed to change drew only favorable comment or no comment at all. They are not mentioned in the discussion that follows. These sections are: §§ 135.7, 135.15, 135.17, 135.27, 135.29, 135.31, 135.33, 135.35, 135.41, 135.61, 135.71, 135.73, 135.79, 135.83, 135.97, 135.99, 135.101, 135.107, 135.111, 135.113, 135.119, 135.141, 135.147, 135.183, 135.185, 135.201, 135.203, 135.205, 135.207, 135.209, 135.211, 135.217, 135.221, 135.241, 135.291, 135.303, 135.329, 135.365, 135.367, 135.369, 135.371, 135.373, 135.375, 135.377, 135.381, 135.383, 135,385, 135.387, 135.389, 135.391, 135.393, 135.395, 135.419, and 135.441.

COMPLIANCE TIME

As discussed earlier in the preamble, this revision of Part 135 is the largest, most complex safety rulemaking project that the FAA has undertaken. Revised Part 135 takes effect on December 1, 1978. Because of the scope of this rulemaking, a flexible mechanism is essential to provide for an orderly transition from the current rules to the new rules. Several provisions are added to allow this. They are patterned on the procedures used when Part 135 was upgraded in 1970.

In general, an operator who holds a Part 135 operating certificate on December 1, 1978, has 60 days (until February 1, 1979) during which to apply for new operations specifications under revised Part 135. If an operator elects not to apply for new operations specifications, then the operating certificate held expires on February 1, 1979, and must be returned to the Administrator. If an operator applies for new operations specifications, the FAA will ask for a schedule that reflects the operator's plan for compliance with the new rules. The operator also will be asked to select a date on which it will meet revised Part 135 and will be ready for an FAA inspection to determine that it, in fact, does so. When the inspection is completed and the operator is in compliance, the FAA will issue new operations specifications. During this time, the existing operating certificate and operations specifications continue in effect.

However, the existing operations specifications expire in any case on: (1) the date the new operations specifications are issued; (2) the date the application is denied; or (3) August 1, 1979, whichever date is the earliest. Section 135.9(d) provides that, if the certificate holder cannot comply by the extension date due to circumstances beyond its control, that date in § 135.9(c) may be extended to December 1, 1979. The certificate holder must apply to the Director, Flight Standards Service, before July 1, 1979, and submit an acceptable schedule for compliance. Any expired operating certificate must be returned to the Administrator.

Certain Part 135 certificate holders now operate large aircraft under operations specifications that require compliance with rules in Part 121. Under § 135.2(d), they may continue these operations indefinitely if they wish. If they choose to apply for operations specifications under § 135.9(b), their authority to operate large aircraft continues until they are issued new operations specifications authorizing those operations.

Section 135.10 is added to establish separate compliance dates for certain rules which will require additional time to meet. Under § 135.10(a), certificate holders have until June 1, 1979, to comply with the requirements for a third attitude gyro (§ 135.149(c)), for shoulder harnesses (§ 135.171(a)), for airline transport pilot certificates (§ 135.243(a)) and for instrument ratings (§ 135.243(b)(iii)). Under § 135.10(b), certificate holders have until December 1, 1979, to comply with the requirements for CVR (§ 135.151), for GPWS (§ 135.153) and for airborne thunderstorm detection equipment (§ 135.173). These compliance dates are established to avoid placing an undue burden on certificate holders and pilots.

Section 135.10(c) provides that the Director, Flight Standards Service, may extend these specific compliance dates, but not beyond December 1, 1980. To get an extension, the certificate holder or pilot must: (1) Show it cannot comply due to circumstances beyond its control; and (2) submit before the original compliance date a schedule which indicates it will comply at the earliest practicable date.

FAA Flight Standards Inspectors are being given training in the differences between the current rules and revised Part 135. Extensive guidance material has been prepared to assist them during the transition. Advisory material is also being prepared for operators and it will become available shortly. Several specific subjects of this material are discussed in detail under the rules involved. This training, written guidance, and advisory material and the changes made in §§ 135.2, 135.9, and 135.10 should ensure a smooth transition to the improved safety rules.

AIRCRAFT SIZE

Commenters generally state that the use of different terms in Part 135 to describe passenger-carrying capacity is confusing. These comments have merit and the standard phrase "maximum passenger seating configuration, excluding any pilot seat" is used throughout Subparts A through I of revised Part 135. Using the actual seating configuration of an airplane is the easiest way to determine the applicability of the operating rules because all the FAA or certificate holder need do is count the seats.

However, a different term is used to determine the applicability of the maintenance rules in Subpart J (see the discussion of § 135.411). This is the number of seats which forms the type certification base of the aircraft. This is done because the certification basis of an aircraft is used to determine the maintenance requirements which will apply.

EXERCISE OF AUTHORITY

Under current §§ 135.15(d) and 135.17(d), a Part 135 operator may petition the Administrator for reconsideration within 30 days after receiving a refusal to amend its certificate or operations specifications. Authority to consider these petitions for reconsideration is delegated to the Director, Flight Standards Service. This delegation is reflected in §§ 135.15(d) and 135.17(d) as adopted in this revision. Also, for uniformity in Part 135, the term "FAA Flight Standards District Office charged with the overall inspection of the certificate holder" is used to describe the responsible FAA office.

APPENDIX A

This table illustrates the substantial increase in the level of safety under revised Part 135.

	THUNDERSTORM DETECTION/ WEATHER RADAR EQUIP	ATP CERTIFICATE FOR PILOT IN COMMAND	PART 121 TYPE MAINTENANCE PROGRAM	PILOT SHOULDER HARNESS
COMMUTER RPMs				
- Total - % covered	76	97	67	76
actual (millions)	515.4	659.6	457.0	515.5
- Multiengine - % covered	79	99	69	78
actual (millions)	515.4	659.6	457.0	515.5
- Turboprop - % covered	97	100	99	99
actual (millions)	347.1	356.2	354.8	354.8
ON-DEMAND RPMs				
- Total - % covered	20	23	11	24
actual (millions)	69.4	76.7	35.2	78.4
- Multiengine - % covered	37	42	18	42
actual (millions)	69.1	76.7	33.5	76.6
- Turboprop - % covered	69	71	71	71
actual (millions)	26.7	27.3	27.3	27.3

This table illustrates the substantial increase in the level of safety under [illegible] Part 135.

APPENDIX B—REGULATORY ANALYSIS

ECONOMIC CONSEQUENCES

In analyzing the economic consequences of this final rule and its major alternative, primary emphasis was placed on the burdens placed on the commuter and on-demand air taxi operators in the domestic fleet. This analysis was accomplished in several phases. First, preliminary data on the industry cost impact of the Part 135 changes in Notice 77-17 of August 28, 1977, as amended on October 27, 1977, were developed through a scientific sample of commuter and on-demand air taxi operators conducted under contract. These estimates by sampled operators were then subjected to a detailed statistical analysis to enhance the precision of industrywide cost impacts. The industry cost estimates were then adjusted for changes between the notice and final rule. The reasonableness of the final rule estimates developed through this statistical sampling technique was then tested by comparison to an independently derived set of judgmental estimates based on FAA staff expertise in commuter and on-demand air taxi operations. Finally, the relationship of these industry cost estimates to other more general economic consequences was assessed.

INITIAL COST IMPACT ASSESSMENT

To obtain information on all factors relevant to a determination of which proposed Part 135 changes were appropriate for final rulemaking, the FAA required more detailed and consistent data on industry cost impacts than it had previously developed or received through the Notice and public comment process. The FAA, therefore, commissioned an independent and comprehensive assessment of the cost impacts likely to result from the proposed changes. This assessment, which examined the impact of individual proposed changes as well as of all changes taken together, was conducted between February 6, 1978, and April 20, 1978, by the Aerospace Corp. with support from Gellman Research Associates, Inc.

OUTLINE OF STUDY

The cost impact assessment was structured to include the following major elements:

- Identification, classification and characterization of potential cost impact areas, through a detailed analysis of the Notice and by comparison with the existing Part 135, in light of known industry practices and procedures.
- Analysis and test of a classification system for air commuter and air taxi operators designed to differentiate the varying cost impacts of the proposed changes across the diverse elements of the industry.
- Development and implementation of an optimal allocation method for choosing a scientific sample of operators with reasonable assurance of achieving high statistical significance of the results.
- Conduct of 64 air commuter and 20 on-demand air taxi operator interviews, utilizing an interview format designed to produce data on the specifically identified cost impacts.
- Processing of the collected data to produce preliminary assessments of cost impacts of the air commuter and on-demand air taxi industries for individual and aggregated proposed changes to Part 135.

Information on the structure, conduct, and results of this cost impact study, along with discussion of limitations on the data developed, are provided in the sections that follow. Full documentation of the study and its associated data bases is provided in the three-volume report, "Cost Impacts of FAR Part 135 Changes on the Commuter and Air Taxi Industries," May 1978, the Aerospace Corp., which is in the docket.

IDENTIFICATION OF PART 135 CHANGES

To begin the cost impact assessment process, it was necessary to develop an indepth analysis of existing Part 135 and the changes proposed in Notice 77-17. For this purpose, a matrix was prepared to:

- Identify specific changes to Part 135 proposed in the notice;
- Summarize the proposed changes to each affected subpart of Part 135;

- Appraise the potential for cost impacts to air commuter and on-demand air taxi operators according to size of aircraft and fleet size; and
- Define the data required to assess and quantify the potential operator cost impacts.
- Two additional steps were taken to assure that all proposed changes resulting in operator cost impacts were properly identified:
- First, comments received by the FAA under the Notice and public comment process from industry members, trade associations, and others, were reviewed and incorporated into the cost impact matrix.
- Second, the draft cost impact classifications were reviewed by three major air commuters and two major on-demand air taxi operators with aircraft in the size ranges affected by the proposed changes.

As a result of the analysis and review process, 32 specific proposed Part 135 changes were identified that were likely to impose operator cost impacts. These rules are listed in Table 1 according to the four cost source categories: Equipment, Maintenance and Training, Revenue Loss (Gain), and Personnel Duty Time and Proficiency.

TABLE 1

NPRM 77-17 RULE CHANGES WITH COST IMPACTS

EQUIPMENT		MAINTENANCE/TRAINING		REVENUE LOSS (GAIN)		PERSONNEL DUTY TIME/PROFICIENCY	
NPRM NO.	DESCRIPTION	NPRM NO.	DESCRIPTION	NPRM NO.	DESCRIPTION	NPRM NO.	DESCRIPTION
135.63	FAA Inspector Seat	135.2	30-Passenger Size Allowance	135.57	Continuation of Flight Criteria	135.39,.41	Management Qualifications
						135.49	Flight and Duty Records
135.75	Baggage Restraints	135.23	Procedure Manual	135.149	Minimum Equipment List	135.85	Aircraft to Maintain Proficiency
						135.193	Pilot in Command ATP Requirements
135.77, .129	Oxygen Requirements	135.37	Financial Review	135.171, .185	Airport-Specific Weather Reports	135.197	Second in Command Ratings
135.125	Large Aircraft, Turbojet Equipment	135.53	Flight Irregularity Records	135.175	IFR Outside of Controlled Airspace	135.200-.219	Duty Time Limitations
135.127	Fire Extinguishers	135.237-.267	Training Program	135.179	Weather Reports and/or Forecasts	135.225	Competency Checks
135.137	IFR Equipment Requirements	135.333-.365	Maintenance Program	135.183	Alternate Airport Fuel	135.229	IFR Proficiency Checks
135.139	Life Preservers			135.187	Icing Condition Operations	135.231	VFR Line Checks
135.143	Shoulder Harnesses						
135.145	Thunderstorm Detection Equipment						
135.147	Crash Axe, etc.						

Preliminary analysis also indicated that industry cost impacts could be differentiated into the following categories according to the type of cost that would be incurred by the air commuter or on-demand air taxi operator:

- Initial cost (the one-time charge for purchase and installation of equipment, for launch of a new training program, for preparation of manuals, and so forth).
- Annual normal recurring cost (continuing costs to maintain additional equipment, for upkeep of new manuals, for continuing new proficiency checks, for salaries of added personnel, and so forth).
- Annual revenue loss (attributable to curtailed operations due to equipment downtime, reduced numbers of revenue passengers or amount of cargo, and so forth) or revenue gain (realized from improved operations resulting from added flights permissible with more flexible weather reporting, added revenue passengers or cargo because of lower fuel requirements, and so forth).

INDUSTRY CHARACTERIZATION

In parallel with the cost impact identification activity, a major effort was undertaken to acquire the data base needed to identify and characterize the air commuter and on-demand air taxi groups and then divide them into more definitive subcategories for analytical purposes. Data was gathered from various FAA, Civil Aeronautics Board (CAB), and other sources. For purposes of this cost impact assessment, the CAB Form 298 series data proved to be the single most useful source, although data collected on several FAA forms relating to aircraft registration, certification, and airport development also provided needed supplementary information. Additional data from several industry associations provided further information on specific air commuter and on-demand air taxi characteristics.

The FAA report "Commuter Air Carrier Operators as of September 1976" was used as the basis for identifying the air commuter population. The report was compiled from CAB Form 298-C data for the third quarter of 1976. Adjustments were made to the 181 operators listed to correct for three duplicate listings and for the inclusion of six operators utilizing large (over 30-passenger) aircraft not relevant for this analysis. Consequently, the net population of air commuter operators was set at 172. While this population was known to be incomplete to a small degree because of late filings of quarterly information, the selection population of 172 operators does comprise those air commuters accounting for over 95 percent of operations performed by the portion of the air commuter industry affected by Part 135 changes.

Population data for on-demand air taxis were derived from CAB Form 298-D filings for calendar year 1976. A computerized data base for this information was developed for the first time to conduct this cost impact assessment. The data base indicates that there is a total domestic on-demand air taxi population of 2,273 operators. Thus, on-demand industry is an order of magnitude larger than the air commuter industry in terms of numbers of operators.

Based on an analysis of these data bases, it was determined that the total commuter population could be categorized into three groups according to the size of the fleet operated in commuter service: 1-4 aircraft, 4-10 aircraft, and more than 10 aircraft. Similarly, size of aircraft operated by air commuters could be grouped into three convenient categories: 0-9 seats, 10-19 seats, and 20-30 seats. The break points in aircraft size groupings correspond to the differing regulatory requirements proposed for each of these categories under the Part 135 Notice. Finally, to assess whether geographic differences were important in the incidence of operator cost impacts, the United States was divided into five areas corresponding to the following aggregations of the 11 FAA regions:

Area 1: Alaska, Northwest, Rocky Mountain regions.
Area 2: Pacific, Southwest, Western regions.
Area 3: Southern region, including Caribbean.
Area 4: Great Lakes and New England regions.
Area 5: Central and Eastern regions.

These groupings were based on the likelihood of the geographic areas exhibiting similar weather and terrain characteristics.

A scientific sampling procedure was developed for selecting those air commuters and on-demand air taxis to be interviewed. Based on priorities established by the FAA, about 75 percent of study team resources during the cost impact data collection process were devoted to the air commuter industry; thus, the air commuter sampling procedure was defined to yield 64 carriers, representing more than one-third of the identified population. On the other hand, the on-demand air taxi sampling procedure was defined to yield only 20 carriers. While this sample size is less than 1 percent of the industry, an analysis of the industry and the likely cost impacts indicated that it would be sufficiently representative for purposes of this study, except for helicopter and turbine aircraft operators, who were analyzed by nonsample techniques.

The air commuter sample was optimally allocated across the total population by utilizing a 45-cell matrix (three fleet sizes, three aircraft sizes, and five geographical regions). The on-demand air taxi sample was optimally allocated utilizing a 15-cell matrix (three aircraft sizes and five geographical regions). In accomplishing the on-demand air taxi allocation, the available data base required the use of a surrogate measure for aircraft size. For this purpose, passengers per departure was selected.

CONDUCT OF INTERVIEWS

The interview process was structured by the development of a comprehensive interview guide designed to obtain from each sampled operator: (1) Confirming demographic information, (2) raw cost data concerning individual proposed changes to Part 135, and (3) confirming information from operators for use in validating the consistency of raw cost impact estimates. Some operators contacted found it inconvenient to participate because of the limited time available. Several of the on-demand air taxi operators selected had gone out of business. More than a dozen substitutions were identified for these various reasons, using a replacement algorithm in the scientific selection process.

ANALYSIS OF DATA

The data obtained through the interview process consisted of operator cost impact estimates for each of the 32 proposed regulatory changes. For each change, cost data was elicited in three categories: Initial cost; normal recurring cost; and recurring revenue loss (gain). A data processing computer program was developed to permit the aggregation of cost impacts over any specified subset of the changes for any specified population subset. The computer program developed expected (mean) value estimates of cost impacts, the standard error of those estimates, and a 0.9 confidence interval of the cost impact.

A number of instances were found where air commuter and on-demand air taxi operators indicated that a cost impact would result but were unable to make a specific cost estimate. These instances occurred most frequently where equipment items, such as shoulder harnesses and thunderstorm detection devices, would be required under the proposed Part 135 change. For those cases, independent cost estimates were developed utilizing data from manufacturers of this equipment. In some instances, it was also found that an occasional operator estimate would be extremely high. These observations were carried through the calculations and reflected as operator estimates. Each such case was, however, given special consideration, and when it was determined that there was no peculiar characteristic of the operator that would justify the higher cost, an independent cost estimate was made based on manufacturer or industry data and a second cost impact calculation performed. Several "off-line" analyses were also made to acquire information on operators of turbojet equipment, large aircraft, and helicopters, because most of the sampled operators did not operate such equipment.

STATISTICAL ANALYSIS

The preliminary industry cost impact estimates were then subjected to a comprehensive analysis that included the following steps: (1) Examination of the sampling and estimating methods used in the preliminary analysis; (2) analysis of the probability distribution of the data; (3) determination of the sensitivity of the preliminary estimates to analytical methods employed in sampling and impact; (4) enhancement of the data to satisfy the initial conditions necessary for the application of various statistical techniques; (5) estimation of costs and benefits for various combinations of subgroups within the sample of commuters and on-demand air taxi industries; and (6) tests of significance for various estimates of the cost of the proposed rule changes as a whole and of the costs due to individual rule changes. This analysis is documented in the report "Analysis of the Relationship of Costs and Benefits Estimated for proposed revision to FAR Part 135," Gellman Research Associates, Inc., June 1978, which is in the docket.

RESULTS OF INDUSTRY COST ASSESSMENT

The results of the above analysis are presented in Table 2 for each rule change proposed in the Notice with an industry cost impact. In addition to totals for each of the commuter and on-demand air taxi sectors, detailed breakouts are provided according to the cost categories of initial, normal recurring and revenue loss (gain), as defined above. The major results are summarized below.

Total first year cost impact on the air commuter industry for the proposals in the Notice would be approximately $14.7 million, 81 percent of which would be expected to recur each year thereafter. The corresponding on-demand air taxi industry total first year costs would be approximately $72.7 million, 92 percent of which would be expected to recur annually.

TABLE 2

RESULTS OF INDUSTRY COST IMPACT ASSESSMENT OF NPRM 77-17
(MEAN VALUES)

			Cost Element ($000)											
			Initial			Normal Recurring			Revenue Loss			Total		
Item No.	NPRM Change No.	Description	Com-muters	Air Taxi	Total	Com-muters	Air Taxi	Total	Com-muters	Air Taxi	Total	Com-muters	Air Taxi	Total
1	135.2	30-Passenger Size Allowance	0	0	0	-120	0	-120	0	0	0	-120	0	-120
2	135.23	Procedure Manual	110	1,463	1,573	108	138	246	0	0	0	218	1601	1,819
3	135.37	Financial Review	9	690	699	53	1,602	1,655	0	0	0	62	2292	2,354
4	135.39, .41	Management Qualifications	10	1,187	1,197	829	13,664	14,493	0	0	0	840	14851	15,690
5	135.49	Flight and Duty Time Records	0	0	0	298	3,464	3,762	0	0	0	298	3464	3,762
6	135.53	Flight Irregularity Records	4	0	4	94	428	522	0	0	0	98	428	526
7	135.57	Continuation of Flight Criteria	0	0	0	69	1,327	1,396	187	12	199	256	1339	1,595
8	135.63	FAA Inspector Seat	46	2	48	0	0	0	284	0	284	330	2	332
9	135.75	Baggage Restraints	224	473	697	0	0	0	0	0	0	224	473	697
10	135.77, .129	Oxygen Requirements	0	369	369	0	16	16	0	0	0	0	385	385
11	135.85	Aircraft to Maintain Proficiency	0	0	0	29	0	29	0	0	0	29	0	29
12	135.125	Large Aircraft & Turbojet Equipment	0	0	0	0	0	0	0	0	0	0	0	0
13	135.127	Fire Extinguishers	22	142	164	1	2	3	0	0	0	23	144	167
14	135.137	IFR Equipment Requirements	311	0	311	12	0	12	0	0	0	323	0	323
15	135.139	Life Preservers	3	0	3	0	0	0	0	0	0	3	0	3
16	135.143	Shoulder Harnesses	148	14	162	39	0	39	0	0	0	187	14	201

Table 2 (continued)

TABLE 2 (cont'd.)

Item No.	NPRM Change No.	Description	Cost Element ($000)											
			Initial			Normal Recurring			Revenue Loss			Total		
			Commuters	Air Taxi	Total	Commuters	Air Taxi	Total	Commuters	Air Taxi	Total	Commuters	Air Taxi	Total
17	135.145	Thunderstorm Detection Equipment	1,136	0	1,136	90	0	90	184	0	184	1,409	0	1,409
18	135.147	Crash Axe, etc.	0	0	0	0	0	0	0	0	0	0	0	0
19	135.149	Minimum Equipment List	0	16	16	0	0	0	0	0	0	0	16	16
20	135.171, .185	Airport Specific Weather Reports	18	473	491	22	81	103	1,043	16107	17,150	1,083	16661	17,744
21	135.175	IFR Outside of Controlled Airspace	0	0	0	-153	-1,890	-2,043	-90	0	-90	-243	-1890	-2,133
22	135.179	Weather Reports and/or Forecasts	0	0	0	69	-158	-89	-161	-1890	-2051	-92	-2048	-2,140
23	135.183	Alternate Airport Fuel	0	0	0	-218	0	-218	-11	-315	-326	-229	-315	-544
24	135.187	Icing Condition Operations	59	0	59	81	0	81	299	1576	1,875	439	1576	2,015
25	135.193	Pilot in Command ATP Requirements	143	0	143	342	0	342	0	0	0	485	0	485
26	135.197	Second in Command Rating	0	0	0	484	856	1,340	0	0	0	484	856	1,340
27	135.200-.219	Duty Time Limitations	0	0	0	5,648	19,287	24,935	165	7951	8,116	5,013	27238	33,051
28	135.225	Competency Checks	0	0	0	-176	-2,015	-2,191	0	0	0	-176	-2015	-2,191
29	135.229	IFR Proficiency Checks	0	0	0	-73	-221	-294	0	0	0	-73	-221	-294
30	135.231	VFR Line Checks	22	0	22	244	320	564	0	0	0	266	320	586
31	125.237-.267	Training Program	269	1,077	1,346	894	726	1,620	0	0	0	1,163	1803	2,966
32	135.333-.365	Maintenance Program	302	12	314	1,349	5,669	7,018	0	0	0	1,650	5681	7,331
		TOTAL	2,835	5,918	8,753	10,014	43,296	53,310	1,901	23441	25,342	14,750	72655	87,405

For air commuters, the individual changes proposed to Part 135 with the greatest first year cost impacts would be those related to duty time limitations, upgraded maintenance programs, thunderstorm detection equipment, training programs, and airports specific weather reports. For air taxis, the greatest first year cost impacts would be those related to duty time limitations, airport specific weather reports, revised management qualifications, the upgraded maintenance program, and flight and duty time records.

Individual rule changes affect different portions of the commuter air carrier and on-demand air taxi industries differently. For example, 34 percent of the proposed changes would affect less than 10 percent of commuter operators, while 25 percent of the proposed changes would have no effect on on-demand air taxis. Furthermore, the duty time limitation would affect three-quarters of both commuter and on-demand air taxi operators and account for approximately 47 percent of total estimated normal recurring net costs and 38 percent of total costs.

Some of the changes proposed to Part 135 in the Notice produce important operator cost savings, including, for example, the effects of greater flexibility in uncontrolled airspace IFR operations, new alternate airport fuel requirements, greater flexibility in interpreting weather reports, and greater proficiency-check flexibility. The total of cost savings identified by the operators would be $7.4 million, of which 87 percent would accrue to on-demand air taxi operators.

The estimates of initial and recurring costs developed in this study are aggregate, making it difficult to judge the intensity of the impact on the operators, either as a group or subdivided into specific subgroups. To facilitate interpretation of the cost impact data, a comparison of costs and revenues was developed for the air commuters. From this analysis, it was determined that the greatest potential cost impacts in relation to revenues would be on those operators using the smallest aircraft (0–9 passengers) and having the smallest fleet size (1–4 aircraft). Air commuter operators of small fleets of large aircraft (20–30 passengers) would also experience relatively large cost impacts. Taken as a whole, air commuter industry cost impacts would represent about 4½-percent of revenues.

ADJUSTMENTS FOR CHANGES TO NOTICE PROPOSALS

Of the 32 proposed rule changes in the notice with a total cost impact of $52,483,000, nine items had changes that produced lower estimates of industry impact in the development of the final rule by $19,085,000. Two of these changes resulted from the deletion of the proposed requirement and seven changes resulted from a modification of the proposed rule that lessened its economic impact. Only two changes involved clarification of assumptions regarding availability of alternative means to meeting the proposed rule. Two other items were deferred for further rulemaking action. The comparison of industry costs impacts for the final rule and its major alternative (Notice 77–17), detailing these adjustments in cost impacts, is discussed below and summarized in Table 3 by cost item.

Cost reductions resulting from the deletion of requirements between the Notice and the final rule total $4,369,000 and involves financial reviews and icing conditions operations (Items 3, 24).

The proposed rule on management requirements (Item 4) was modified to be more flexible. In addition, FAA believes that operator estimates took inadequate consideration of the cost reducing option for deviations that would be authorized for equivalent experience. Since on-demand air taxis would normally have less equipment and personnel and would benefit more by combining management positions, their cost impact was reduced more than that for the commuters. Similarly, the cost impact of the proposed rule on airport weather reports (Item 20) was reduced for the on-demand air taxi estimate of revenue loss because of inadequate consideration by the operators of alternative means available including amendment of operating specifications for alternative sources of weather reports. These two adjustments resulted in cost impact reductions of $6,109,000 and $6,443,000, respectively.

TABLE 3

RESULTS OF COST IMPACT ASSESSMENT: FINAL RULE VERSUS NPRM 77-17 (MEAN VALUES)

Item No.	Rule Section No.	NPRM Section No.	Section Title	Final Rule Cost Impact ($000)												Total Cost NPRM Basis
				Initial			Normal Recurring			Revenue Loss			Total			
				Commuters	Air Taxi	Total	Commuters	Air Taxi	Total	Commuters	Air Taxi	Total	Commuters	Air Taxi	Total	
1	135.2	(135.2)	Air Taxi Operations with Large Aircraft	0	0	0	-120	0	-120	0	0	0	-120	0	-120	-120
2	135.21	(135.23)	Manual Requirements	110	1,463	1,573	108	138	246	0	0	0	218	1,601	1,819	1,819
3	Deleted	(135.37)	Periodic Financial Status Review	0	0	0	0	0	0	0	0	0	0	0	0	2,354
4	135.37, .39	(135.39, .41)	Management Personnel Required and Qualifications	8	712	720	663	8,198	8,861	0	0	0	671	8,910	9,581	15,690
5	135.63	(135.49)	Recordkeeping Requirements													3/
6	135.65	(135.53)	Reporting Mechanical Irregularities	4	0	4	94	428	522	0	0	0	98	428	526	526
7	135.69	(135.57)	Restriction or Suspension of Operations: Continuation of Flight in an Emergency	0	0	0	69	1,327	1,396	187	12	199	256	1,339	1,595	1,555
8	135.75	(135.63)	Inspection Credentials: Admission to Pilots Compartment: Forward Observers Seat	28	2	30	0	0	0	170	0	170	198	2	200	332
9	135.87,	(135.75)	Carriage of Cargo Including Carry on Baggage	224	473	697	0	0	0	0	0	0	224	473	697	697
10	135.89, .157	(135.77, .129)	Pilot Requirements: Use of Oxygen and Oxygen Equipment Requirements	0	0	0	0	0	0	0	0	0	0	0	0	385
11	135.97	(135.85)	Aircraft and Facilities for Recent Flight Experience	0	0	0	29	0	29	0	0	0	29	0	29	29
12	135.149, .151, .153	(135.125)	Equipment Requirements: General and Cockpit Voice Recorders and Ground Proximity Warning System	0	1,200	1,200	0	150	150	0	0	0	0	1,350	1,350	1,890 1/
13	135.155	(135.127)	Fire Extinguishers: Passenger-Carrying Aircraft	0	0	0	0	0	0	0	0	0	0	0	0	167
14	135.165	(135.137)	Radio and Navigation Equipment: Extended Overwater or IFR Operations	311	0	311	12	0	12	0	0	0	323	0	323	323
15	135.167	(135.139)	Emergency Equipment: Extended Overwater Operations	3	0	3	0	0	0	0	0	0	3	0	3	3
16	135.171	(135.143)	Shoulder Harness Installation at Flight Crewmember Stations	148	14	162	39	0	39	0	0	0	187	14	201	201

Table 3 (continued)

TABLE 3 (Continued)

RESULTS OF COST IMPACT ASSESSMENT: FINAL RULE VERSUS NPRM 77-17 (MEAN VALUES)

Item No.	Rule Section No.	NPRM Section No.	Section Title	Final Rule Cost Impact ($000)												Total Cost NPRM Basis
				Initial			Normal Recurring			Revenue Loss			Total			
				Com-muters	Air Taxi	Total	Com-muters	Air Taxi	Total	Com-muters	Air Taxi	Total	Com-muters	Air Taxi	Total	
17	135.173	(135.145)	Airborne Thunderstorm Detection Equipment Requirements	1,136	0	1,136	90	0	90	184	0	184	1,410	0	1,410	1,410
18	135.177	(135.147)	Emergency Equipment Requirements for Aircraft Having a Passenger Seating Configuration of More than 19 Passengers	0	0	0	0	0	0	0	0	0	0	0	0	0
19	135.179	(135.149)	Inoperable Instruments and Equipment for Multi-Engine Aircraft	0	16	16	0	0	0	0	0	0	0	16	16	16
20	135.213, .225	(135.171, .185)	Weather Reports and Forecasts and IFR: Takeoff, Approach and Landing Minimums	18	473	491	22	81	103	1,043	9,664	10,707	1,083	10,218	11,301	17,744
21	135.215	(135.175)	IFR Operating Limitations	0	0	0	-153	-1,890	-2,043	-90	0	-90	-243	-1,890	-2,133	-2,133
22	135.219	(135.179)	IFR: Destination Airport Weather Minimums	0	0	0	69	-158	-89	-161	-1,890	-2,051	-92	-2,048	-2,140	-2,140
23	135.223	(135.183)	IFR: Alternate Airport Requirements	0	0	0	-218	0	-218	-11	-315	-326	-229	-315	-544	-544
24	135.227	(135.187)	Icing Conditions Operating Limitations	0	0	0	0	0	0	0	0	0	0	0	0	2,015
25	135.243	(135.193)	Pilot in Command Qualifications	143	0	143	342	0	342	0	0	0	485	0	485	485
26	135.245	(135.197)	Second in Command Qualifications	0	0	0	200	200	400	0	0	0	200	200	400	1,340
27	135.261	(135.200-.219)	Flight and Duty Time Limitations													2/
28	135.293	(135.225)	Initial and Recurrent Pilot Testing Requirements	0	0	0	-176	-2,015	-2,191	0	0	0	-176	-2,015	-2,191	-2,191
29	135.297	(135.229)	Pilot in Command: Instrument Proficiency Check Requirements	0	0	0	-73	-221	-294	0	0	0	-73	-221	-294	-294
30	135.299	(135.231)	Pilot in Command: Line Checks: Routes and Airports	22	0	22	244	320	564	0	0	0	266	320	586	586
31	135.321-.351	(135.237-.267)	Training	269	1,077	1,346	894	726	1,620	0	0	0	1,163	1,803	2,966	2,966
32	135.411-.443	(135.333-.365)	Maintenance, Preventive Maintenance, and Alterations	302	12	314	1,349	5,669	7,018	0	0	0	1,651	5,681	7,332	7,332
	TOTAL			2,726	5,442	8,168	3,484	12,953	16,437	1,322	7,471	8,793	7,532	25,866	33,398	52,483

1/ These costs are from a special "off-line" analysis because the sample of small air taxi operators did not include operators of affected turbojet aircraft.

2/ Flight and duty time limitation and associated recordkeeping deferred for further rulemaking action. See discussion in accompanying text.

3/ Major cost impacts in recordkeeping relate to flight and duty time and are, therefore, deferred. Other cost impacts are negligible.

NOTE: The estimates provided in this table are refined from the preliminary figures provided in the study "Cost Impact of FAR Part 135 Changes on the Commuter and Air Taxi Industries, May 1978." The revised estimates for cost impacts of the proposed rule can be found in the study "Analysis of the Relationships of Costs and Benefits Estimated for Proposed Revisions to FAR Part 135, June 1978." Comparison of the preliminary and revised estimates are shown in Figure 4-23, pages 83 to 85 of the latter report. A discussion of the methods of estimation and data base enhancement are included in Sections III and IV of that report. These reference reports are available for review in docket number 16097.

Item 8, § 135.75, providing a forward observer seat for FAA inspectors, drew negative comment. The final rule was written to state what type of communication equipment was required to be furnished to the FAA inspector. In addition, the preamble clarified that it would not be FAA policy to "bump" revenue passengers unnecessarily. This resulted in a reduction of the estimated cost impact from $332,000 to $200,000.

Item 10, §§ 135.89 and 135.157, pilot requirements for use of oxygen and oxygen equipment requirements, was modified from the Notice to the final rule in light of the comments received. This resulted in a reduction of the estimated cost impact from $385,000 to zero.

Item 13, § 135.155, fire extinguishers, was changed from requiring a fire extinguisher in the passenger compartment of each aircraft seating at least six passengers to an aircraft seating at least 10 passengers. This resulted in a reduction of the cost impact from $167,000 to zero.

Item 12, §§ 135.149, 135.151, and 135.153, equipment requirements, was reduced from the original notice by $540,000 by eliminating the flight data recorder requirement. Safety of flight will not be compromised by such a withdrawal.

It was estimated that § 135.245, second in command qualifications, would have an estimated cost of $1,340,000. The FAA believes that this figure is too high since only a few operators out of a very small sample reported an impact. When extrapolated to the total population, the estimated cost has been reduced to $400,000 (Item 26). Also, many pilots currently serving in Part 135 operations already possess the necessary rating since the ratings are required under the present rule for certain type operations.

FINAL RULE COST IMPACT ANALYSIS

When all adjustments to the notice are considered, the estimated first year costs to the industry will be $33,398,000. Of this total, $8,168,000, or 25 percent, will be initial costs; $16,437,000, or 49 percent, will be normal recurring costs; and $8,793,000, or 26 percent, will be from estimated revenue loss. The estimated cost of the significant changes to communter air carriers is $2,726,000 in initial costs and $5,808,000 in annual recurring costs. The annual recurring costs are partially offset by estimated annual recurring savings of $1,002,000. The estimated initial cost to the air taxi segment is $5,442,000 with an annual recurring cost of $26,913,000. The annual recurring costs are partially offset by estimated annual recurring savings to the air taxi industry of $6,489,000.

In addition to the cost estimates derived from the scientific sampling of air commuter and on-demand air taxi operator estimates, the FAA conducted its own independent analysis of these proposed rules and their likely industry cost impacts. These estimates closely approximate the operators estimates taken as a whole across all rule changes. Estimates for individual cost items vary to some extent, reflecting differences primarily in assumptions as to current industry equipage and practice and the availability of alternative means for meeting proposed requirements.

In Notice 77-17, four major proposals were highlighted as having major additional costs. Following a review of the response to Notice 77-17 and the study of other pertinent data, the cost estimates of the economic impact of revised Part 135 rules were reevaluated. These proposals are discussed below.

The first proposed to require airborne thunderstorm detection equipment for all equipment for all multiengine aircraft conducting passenger-carrying operations and having a passenger seating configuration of 10 seats or more, excluding any pilot seat. The FAA estimates that the airborne thunderstorm detection equipment requirement would result in an initial cost of $1,136,000 and an annual recurring cost including the loss of revenue of $274,000 (Item 17).

The second proposed to require the use of a continuous maintenance program for all aircraft certificated to carry 10 passengers or more, exclusive of flight crew. The FAA estimates the initial cost to comply with this program will be $314,000 and the annual recurring cost will be $7,018,000 (Item 32).

The third proposed to require all aircraft carrying 10 or more passengers to be type certificated in the transport category by 1984. This proposal was withdrawn by Notice 77-17A.

The fourth proposed to require all turbojet aircraft, with a passenger seating configuration, excluding any pilot seat, of 10 passengers or more, to have a CVR, FDR, and GPWS installed. The requirement for an FDR is deleted in the final rule. Section 135.153 provides for approval of an alternate GPWS to that required. The initial cost is estimated to be $1,200,000 and the annual recurring cost to be $150,000 (Item 12).

There were other sections of the proposed rules which, on further evaluation, do have a cost impact which should be discussed. These cost estimates are based on an analysis of input received from Part 135 operators and FAA evaluation. The following rules are expected to have an impact.

Section 135.21 (Item 2) requires a manual setting forth the certificate holder's procedures and policies. Since a manual is already required by current Part 135, there is only an incremental cost required to include additional information in the manual regarding the crew training program, the maintenance personnel data, and other company policy. In addition, some costs will be incurred for printing and distributing the revised manual. The FAA estimates this requirement will initially cost $1,573,000 and annual recurring costs will be $246,000.

Item 4, §§ 135.37 and 135.39 regarding management personnel requirements and qualifications will also increase costs to the operators. The rule has been revised from the notice to allow the director of operations and chief pilot to have a commercial pilot certificate instead of an ATP certificate. An ATP certificate would only be required if the certificate holder is conducting operators which would require the pilot in command to hold an ATP certificate. This would involve only a small portion of the certificate holders. The management personnel of many of these operators already meet this requirement. It should be noted that the rule provides for deviation authority from the FAA in combining positions or authorizing different positions when the size of the organization cannot support the type and number of positions in the rule. The FAA can also grant deviations from the experience requirements. Many operators were concerned that deviations would not be granted except in very unusual cases. Consequently, it appears they overestimated the cost impact.

A majority of the operators now have a management organization to some extent, thus, only minor changes would be required to meet the new rules regarding the number of persons and additional qualifications. The estimated additional cost to initially meet this requirement is $720,000 and annual recurring costs are estimated to be $8,861,000.

The recordkeeping changes as required by § 135.63 (Item 5) also involve quantifiable cost increases. The primary additional cost factor in this area is in maintaining records for flight and duty time limitations. The proposals in Subpart F dealing with flight and duty time limitations are deferred; consequently, the additional recordkeeping provision is also deferred and cost impacts, being minimal, are deleted.

A new requirement in § 135.69 to restrict or suspend operations, if conditions hazardous to safe operations are known to exist, is estimated to result in annual recurring cost of $1,595,000 (Item 7).

New Subpart H sets forth requirements for training and for the development of a training program. The estimated cost to initially meet these requirements is $1,346,000, with estimated annual recurring costs of $1,620,000 (Item 31).

Section 135.87 (Item 9), regarding the stowage of cargo and carry-on-baggage, will require some modifications to be made to certain aircraft, especially in the stowage of under seat baggage. The estimated initial cost to industry is $697,000 with little annual recurring costs.

The proposals in Subpart F (Item 27), dealing with flight and duty time limitations, are deferred. Consequently, all potential cost impacts have been deleted.

Under the provisions of § 135.213, weather reports and forecasts and § 135.225, IFR: takeoff, approach and landing minimums (Item 20), no pilot may begin an instrument approach to an airport unless the airport has designated weather reporting facilities. The weather reporting facility must be operated by the U.S. National Weather Service, a source approved by it, or a source approved by the Administrator. However, an operator's operations specifications may be amended, under certain circumstances, to allow weather observations to be taken at a location other than on that airport, thus allowing an operation to be conducted into that airport. The FAA estimates this rule change will result in an initial cost of $491,000 and an annual recurring cost including revenue loss of $10,810,000.

There are other rule changes, such as reporting mechanical irregularities (§ 135.65), aircraft and facilities for recent flight experience (§ 135.97), radio and navigation equipment requirements (§ 135.165), emergency equipment: extended overwater operations (§ 135.167), shoulder harness installation (§ 135.171), minimum equipment list (§ 135.179), pilot in command qualifications (§ 135.243), second in command qualifications (§ 135.245), and line checks (§ 135.299), which will have a total initial estimated cost of $661,000 and a total annual recurring cost of $1,908,000 (Items 6, 11, 14, 15, 16, 19, 25, 26, 30).

Various changes were proposed to the current Part 135 rules which will result in a cost savings to the Part 135 operators. The implementation of §§ 135.1 and 135.2 will result in a savings because of the authorization to use larger aircraft under Part 135 rules with the advantage of carrying more passengers or heavier payloads.

Section 135.177 (Item 18), regarding the use of a minimum equipment list for multiengine aircraft, will result in an overall cost savings to the operators, especially commuter air carriers, who elect to take advantage of its provisions. However, if an ATCO certificate holder elects not to apply for such approval, no costs savings would be realized.

Another section where savings will be realized is that regarding IFR operating limitations, § 135.215 (Item 21). This rule contains provisions relaxing IFR operations outside of controlled airspace and at airports that do not have approved procedures. The majority of the savings will accrue to on-demand air taxi operators.

The relief granted operators regarding destination airport requirements for IFR operations in § 135.219 will also result in cost savings to both commuter air carriers and air taxi operators. The rule allows over-the-top operations and the use of weather reports or forecasts or any combination of them for landing minimums at the destination airport (Item 22).

In § 135.223 (Item 23), the alternate airport weather minimum requirements for IFR operations have been amended to allow operators more flexibility in determining when an alternate airport would be necessary in flight planning. Reduction in fuel weight will reduce operating costs.

Section 135.293 (Item 28) pertains to initial and recurrent pilot flight testing requirements. The use of simulators and relaxation of the requirements pertaining to each type of aircraft to be flown by the pilot for the check and the extent of maneuvers to be given, should result in a cost savings.

The last item deals with pilot in command, instrument proficiency checks, § 135.297 (Item 29). Savings would result because a simulator could be used for a portion of the check. Additionally, only three typical instrument approach procedures need to be demonstrated in order for the pilot to be issued a letter of competency for all types of instrument approach procedures.

It is estimated that these changes (Items 1, 18, 21, 22, 23, 28, and 29) will save commuter air carriers and on-demand air taxi operators $7,442,000 annually.

PART 121

§ 121.9 *Operations of airplanes having a maximum passenger seating configuration of 30 seats and a maximum payload capacity of 7,500 pounds or less.*

One commenter suggests that § 121.9 should except Part 121 certificated air carriers from compliance with §§ 135.37 and 135.39 on management personnel requirements and qualifications. The commenter claims these requirements now are in Part 121, those certificate holders already meet them and the Part 121 rules meet or exceed those in Part 135. The commenter submits safety would not be enhanced by requiring compliance with §§ 135.37 and 135.39 and compliance would be burdensome. These comments have merit, although the parallel Part 121 rules apply only to supplemental air carriers and commercial operators. However, the corporate structure and management personnel qualifications of the domestic and flag air carriers are sufficient and the rule excepts those sections.

One commenter states that scheduled air carriers operating airplanes qualifying under Part 135 should have an option to conduct their scheduled operations with those aircraft under either Parts 135 or Part 121. Section 135.2(d) allows an operator who is now conducting operations in aircraft having a maximum passenger seating configuration, excluding any pilot seat, of 30 seats or less and a maximum payload capacity of 7,500 pounds or less, to continue operating under Part 121 rules for supplemental air carriers, if the operator elects to do that.

Two commenters suggest that Part 121 and Part 135 operators should have the option to selectively apply appropriate provisions of Part 121 with the approval of the Administrator. They state that this provides a higher level of safety. The revision of Part 135 achieves an appropriate level of safety and the suggestion would create administrative difficulties in the uniform application of the rules to Part 135 operators.

One commenter recommends that the maximum number of passengers and the maximum payload of each aircraft should be limited by Aircraft Flight Manual data, instead of specifying a passenger seating configuration or payload capacity in the rule. This comment is discussed at length under § 135.1.

One commenter suggests changing the title of Part 135 to "Air Charter Operators and Commercial Operators" because the term "Air Taxi" is demeaning. The Civil Aeronautics Board established this classification of exempt air carriers and designated them as "Air Taxi Operators" in 14 CFR Part 298. The term now is widely used by the aviation industry and the traveling public. This segment of aviation offers both on-demand and scheduled service. The term "Air Taxi" is not generally described or known as demeaning in aviation circles or by users.

Current § 121.9(b) is no longer needed since the dates have passed and it is deleted.

§ 121.13 *Rules applicable to helicopter operations: Deviation authority.*

Revised Part 135 applies to aircraft having a maximum passenger seating configuration of 30 seats or less and a maximum payload capacity of 7,500 pounds or less. Current Part 135 applies to "small aircraft," as defined in § 1.1. The reference in § 121.13 to the operation of a "small helicopter" is changed to be consistent with revised Part 135.

PART 127

§ 127.5 *Operation of airplanes having a maximum passenger seating configuration of 30 seats or less and a maximum payload capacity of 7,500 pounds or less.*

Section 127.5 is amended to be consistent with §§ 121.9, 121.11 and revised Part 135 for the reasons just discussed. Current § 127.5(b) is no longer needed since the dates have passed and it is deleted.

SPECIAL FEDERAL AVIATION REGULATIONS (SFAR)

SFAR 23, "Airworthiness Standards; Small Airplanes Capable of Carrying More Than 10 Occupants," was issued on December 27, 1968 (34 FR 189; January 7, 1969). SFAR 23 is deleted from Title 14 CFR because it no longer is of current effect. Appendix A of Part 135 supersedes SFAR 23 for airplanes type certificated after July 19, 1970 (see § 135.169(b)). This deletion does not affect the type certification basis of airplanes which demonstrated compliance with SFAR 23 before July 19, 1970. Appendix A is republished without substantive change in revised Part 135.

Sections 135.151 and 135.153 supersede two other SFARs and they are revoked: SFAR 30, "Ground Proximity Warning Systems" and SFAR 33, "Flight Recorders and Cockpit Voice Recorders." Compliance with §§ 135.151 and 135.153 is discussed in detail above.

PART 135

SUBPART A—GENERAL

§ 135.1 *Applicability. (Proposed § 135.1.)*

One commenter on § 135.1(a)(3) recommends that the words "other than air carrier" and "commercial operations" be deleted. Part 135 applies both to commercial operator operations for compensation and hire and to air taxi operators who are exempt air carriers under 14 CFR Part 298. They are not the same and § 135.1(a)(3) is necessary.

One commenter on § 135.1(a)(3) states the limitations on the size of aircraft operated under Part 135 should be determined under the Aircraft Flight Manual instead of specifying a passenger seating configuration or payload in the rule. An Aircraft Flight

Manual contains technical data on operating limitations and flight parameters. The manual applies to a particular aircraft and not to all aircraft of the same make and model. Many manuals may not contain information on maximum passenger seating or payload capacities. A clear standard is necessary so there is no question about the applicability of revised Part 135.

One commenter recommends that "on-demand" air taxi certificate holders be designated as Category I, that they be considered "single entity charter" flights and that a Category II apply to commuter air carriers and large airplane operators. Separating "on-demand" and commuter air taxi operators was considered in developing revised Part 135. This concept was included in proposals considered during the Part 135 Review Conference held at Denver in 1976. The concept was discussed at length during the conference. As discussed in the preamble of Notice 77-17, rules based upon aircraft size (9 passengers or less excluding pilot seats and 10 passengers or more excluding pilot seats) are adopted to ensure equal application of revised Part 135.

One commenter states that Part 135 should apply to sightseeing flights. Current § 135.1(b)(2) excepts sightseeing flights from Part 135 and no facts have come to light that justify a change. The Part 91 rules on flight operations and maintenance provide adequately for these operations.

Several commenters state that § 135.1(b)(7) is too restrictive. This exception to Part 135 allows a limited kind of operation (for example, Santa Claus flights from an airport to a shopping center and back). The restrictions are necessary in the interest of safety. Of course, these operations are subject to Part 91.

Another commenter objects to § 135.1(b)(7) because it prohibits sightseeing flights in helicopters. Section 135.1(b)(2) excepts from Part 135 "nonstop sightseeing flights that begin and end at the same airport, and are conducted within a 25-statute-mile radius of that airport." This exception applies to sightseeing flights in any aircraft. Section 135.1(b)(7) applies to a more limited operation (for example, Santa Claus flights) that involves one or more stops. Section 135.1(b)(7)(iv) is changed to have the operator notify the "FAA Flight Standards District Office responsible for the geographic area concerned."

One commenter recommends retaining current § 135.1(b)(7) that excepts from Part 135 "any other operation approved by the Administrator." The commenter states this rule provides operational flexibility. The commenter does not explain what operational flexibility is needed or cite examples of using that section in its operations. There is no provision like current § 135.1(b)(7) in any other Federal aviation regulation. There is no record of any recent use of that section. Part 11 provides procedures for obtaining exemptions and for petitioning for rulemaking. Several sections in the revised Part 135 also contain deviation authority. In this light and in the absence of any persuasive justification from the commenter, current § 135.1(b)(7) is not included in the rule.

Several instances have occurred in which a person desires to carry without charge a candidate in a Federal election. The candidate must pay for the carriage under the rules of the Federal Election Commission (11 CFR Chapter I). Ordinarily, receipt of payment for carriage is an operation for compensation or hire and requires a Part 135 certificate. Carriage of candidates is infrequent and the operator does not intend to engage in the business of an air carrier or commercial operator. A new § 135.1(b)(10) is added to except this carriage in an aircraft to which Part 135 would otherwise apply. There are two conditions: (1) The principal business of the aircraft operator must not be that of an air carrier or commercial operator; and (2) the payment must be required and may not exceed the amount required by the Federal Election Commission rules. The FAA contemplates issuance of a Special Federal Aviation Regulation which will relax the requirements of Part 121 and present Part 135 in time for the November 1978 Federal elections.

§ 135.2 *Air taxi operations with large aircraft. (Proposed § 135.2.)*

One commenter on § 135.2 recommends that the maximum passenger seating capacity of the aircraft operated under Part 135 should be governed by the economic regulations of the Civil Aeronautics Board (14 CFR Part 298). Changes to the Board's rules then would automatically change the applicability of Part 135. This would constitute a derogation of the FAA's responsibility for safety. Each change in the Board's definition of aircraft size could have significant safety implications. To properly discharge its responsibility for aviation safety, the FAA must conduct a thorough evaluation. If a change is appropriate, rulemaking is initiated to amend the Federal Aviation Regulations. For example, the Board is considering changes to the economic rules (14 CFR Part 298) that would allow larger aircraft to be used in air taxi operations. The FAA is now reviewing those proposals to determine what, if any, changes are appropriate in the safety rules.

One commenter wants the limits specified in the Airplane Flight Manual to determine the size of the airplane, the number of passengers and the payload for operations under § 135.2. This comment is discussed at length under § 135.1.

Two commenters state the definition of "maximum zero fuel weight" in § 135.2(e)(1) is not clear but did not elaborate. The definition of "maximum zero fuel weight" is defined in § 135.2(e)(3) and is the definition of 14 CFR 298.2.

Section 135.2(d) is advised to provide for compliance as discussed above.

§ 135.3 *Rules applicable to operations subject to this Part. (Proposed § 135.3.)*

A sentence is added to § 135.3(b) to cite the incorporation of Annex 2 by reference in § 91.1(c) and proposed paragraph (c) is withdrawn.

§ 135.5 *Certificate and operations specifications required. (Proposed § 135.7.)*

The commenter on § 135.5 states the limitations on the size of aircraft operated under Part 135 should be determined under the Aircraft Flight Manual instead of specifying passenger seating configuration or payload in the rule. This comment is discussed at length under § 135.1.

§ 135.9 *Duration of certificate. (Proposed § 135.11.)*

Most commenters on § 135.9(a) suggest that the time for the certificate holder to return a revoked or suspended certificate should be 10 working days instead of 10 days. This comment has merit and the rule specifies no time for returning the certificate. Section 135.9(b) is added to provide for compliance as discussed above.

§ 135.10 *Compliance dates for certain rules. (New.)*

New § 135.10 is added to provide for compliance as discussed above.

§ 135.11 *Application and issue of certificate and operations specifications. (Proposed § 135.13.)*

Most commenters on § 135.11(b)(2) object to listing the "type" aircraft subject to the maintenance program in the certificate holder's operations specifications. They argue the rule is less flexible than the current rule. They claim delays will result when the operations specifications are amended to add or delete aircraft. They observe that they now must maintain a current list of aircraft that is available to the FAA on request. These comments have merit and this requirement is deleted. However, the make, model, and registration number of each aircraft that is subject to a continuous airworthiness maintenance program must be in the operations specifications to identify these aircraft to which the program applies.

Some commenters on § 135.11(b)(2) object to listing of registration numbers in the operations specifications regardless of the maintenance program required under Part 135. Section 135.11(b)(2) requires this listing only for aircraft inspected under § 135.419 (an approved aircraft inspection program) or under § 135.411(a)(2) (a continuous airworthiness maintenance program). This is required under current Part 135.

Several commenters on § 135.11(b)(2) object to listing "maintenance items required by the Administrator." Although they do not object to listing "time limitations," they argue the listing of maintenance items is not contained in comparable provisions of Part 121. Listing additional maintenance items under § 135.11(b)(2) is limited, by reference to § 135.421, to those aircraft that are type certificated for a passenger seating configuration, excluding any pilot seat, of nine seats or less. This rule is necessary because there now are no time limitations or standards for those items which must be part of a maintenance program under § 135.421.

One commenter states that § 135.11(b)(2) is ambiguous. The comment has merit and § 135.11(b)(2) is reorganized for clarity.

§ 135.13 *Eligibility for certificate and operations specifications. (Proposed § 135.15.)*

Commenters on § 135.13(b)(2) object because the rule prevents an otherwise competent individual from obtaining employment with an applicant for an ATCO operating certificate. Section 135.13(b)(2) is similar to § 121.51(b)(2). Noncompliance data is a significant factor to consider with an application for an ATCO operating certificate. Similar information has been helpful in evaluating air carrier applicants and the persons they propose for management positions. The FAA revokes an operating certificate only for a very serious infraction of the regulations. If a person contributes materially to that infraction, this fact should be considered as a factor in evaluating the new application. This does not mean the approval of the application or employment position will be automatically withheld, but that each situation will be carefully evaluated on its merits.

Some commenters recommend a time limit so an individual is not subject to a "life sentence" due to a past violation. This comment was carefully evaluated but it is too rigid and impractical. After an operating certificate is revoked the FAA evaluates the performance and reliability in aviation employment of the people involved over a reasonable period of time. This varies from case to case.

§ 135.19 *Emergency operations. (Proposed § 135.21.)*

One commenter on § 135.19 states that the FAA should request a report when a deviation occurs. The other commenter suggests the report should be filed in 10 working days. The FAA would not know when a deviation occurs in most cases and thus could not request a report. To allow greater flexibility in filing a report, the reporting period is changed to 10 days excluding Saturdays, Sundays, and Federal holidays.

§ 135.21 *Manual requirements. (Proposed § 135.23.)*

The proposed rule contained too many paragraphs and it is divided into two sections for simplicity. Section 135.21 contains only the manual requirements (proposed paragraphs (a) and (c) through (h)). Section 135.23 contains the manual contents (Proposed paragraph (b)).

Two commenters on § 135.23(a) claim the deviation authority would not be consistently applied by Regional and District Offices. This provision is in the current rule and is meant to provide relief for smaller operators. No administrative problems have been encountered in dealing with deviation requests in the past.

Several commenters object to the phrase "acceptable to the Administrator" in § 135.21(a) because it gives the FAA too much latitude regarding manuals and uniform nationwide administration by the FAA will be a problem. Responsibility for determining whether a manual is acceptable ensures that manual contents are correct, are not contrary to the rules and are adequate for the operations the certificate holder proposes to conduct. District Offices have extensive experience in reviewing and accepting manuals.

Section 135.21(d) is changed so that a copy of the manual or appropriate portions must be "available" (not "furnished") to ground personnel to reduce the number of copies the certificate holder must prepare.

Section 135.21(g) is revised to allow a certificate holder who performs maintenance at specified stations to keep the appropriate sections of its manual at the station rather than carry it aboard the aircraft. The FAA believes this change is necessary since maintenance, in addition to inspections, may be performed at specified stations where a certificate holder provides the appropriate sections of its manual.

§ 135.23 *Manual contents. (Proposed § 135.23.)*

As discussed under § 135.21, new § 135.23 contains the rules on manual contents. Several commenters on § 135.23 object to requiring the manual to be in a form acceptable to the Administrator. They state the certificate holder should be responsible for the manual's form as long as it contains all of the required information. These comments have merit and that requirement is deleted.

Several commenters on § 135.23(a) state that "identity" requirement for management personnel is ambiguous. Section 135.37(a) identifies the management personnel required to be identified under § 135.23(a). Section 135.23 is clarified to reflect that.

Several commenters argue that § 135.23(f), (g) and (h) are difficult to understand, should not be in the rules or should be in Subpart J. These procedures are necessary in the certificate holder's manual for the pilot in command to report and record discrepancies, to determine the airworthiness status of the aircraft and to arrange for the maintenance or servicing of the aircraft. They are in current Part 135.

Three commenters on § 135.23(p) state that the wording is excessive and unclear. This rule requires each certificate holder to train personnel to recognize hazardous material if presented for shipment even though the certificate holder has a policy prohibiting its carriage. This is the minimum training needed to recognize hazardous materials and limits the possibility of inadvertently carrying this material. Certificate holders who carry hazardous material need more extensive training to comply. Section 135.23(p) is revised for clarity.

The regulations of the Department of Transportation governing the transportation of hazardous materials in aircraft are in 49 CFR Parts 171 through 173 and 175. They are issued under the Hazardous Materials Transportation Act (49 U.S.C. 1801–1812). The Secretary of Transportation has delegated to the FAA Administrator (under 49 CFR 1.47(k)) the functions vested in the Secretary under setcions 109, 110, and 111 of the Hazardous Materials Transportation Act relating to investigations, records, inspections, penalties, and specific relief for shipment of hazardous materials by air. The FAA's enforcement procedures for cases involving air transportation or shipment of hazardous materials are in Part 13 of the Federal Aviation Regulations.

§ 135.25 *Aircraft requirements. (Proposed § 135.25.)*

Two commenters on § 135.25 state that certificate holders should have exclusive use of each aircraft used in their operation. They claim this provides adequate control for proper maintenance and use of the aircraft. Requiring operators to either own or have exclusive use of each aircraft they operate might be desirable. However, the current rule adequately ensures proper control over maintenance and also is sufficiently flexible. A more stringent rule is not justified at this time.

One commenter states that § 135.25 should prohibit use of the same aircraft by two different air taxi operators. This practice is acceptable if the operator has a written agreement with the aircraft owner regarding its use which also deals with performing maintenance. If a certificate holder has an exclusive use agreement for an aircraft, that person may authorize another certificate holder to use it. However, only one certificate holder at a time can have an exclusive use contract for a given aircraft.

Another commenter states that § 135.25(b) is not necessary. This rule is in current Part 135. There is no justification for changing it in the revision of Part 135. An applicant or a certificate holder should reasonably expect to either own or have exclusive use of at least one aircraft and the rule provides positive control for both operation and maintenance of that aircraft.

§ 135.37 *Management personnel required. (Proposed § 135.39.)*

Commenters on § 135.37 object to the management requirements because sufficient justification was not presented, they lack provisions for the small operator and they overly complicate establishing and operating an air taxi operation.

Specific management personnel must be required in this revision of Part 135. The increasing complexity of Part 135 operations requires a management organization adequate to ensure that the operations are conducted safely. Different kinds and sizes of operations exist. Thus, § 135.37(a) is changed so the rule does not apply when the certificate holder is the only pilot. Also, § 135.37(b) provides for deviations. The Administrator may approve different positions or numbers of positions if the operation can be safely performed with fewer or different positions than § 135.37(a) requires. This flexibility also is necessary because of the varying size and complexity of Part 135 operations. The FAA District Office handles the request because they are familiar with the scope of the certificate holder's operation. Before approval, an evaluation is made to determine if a safe operation can be conducted.

Several commenters object to requiring the address of persons listed in § 135.37(c)(2). This comment has merit and the requirement is deleted.

One commenter states § 135.37 is more stringent than similar requirements in Part 121, but fails to explain that contention.

§ 135.39 *Management personnel qualifications. (Proposed § 135.41.)*

Commenters on §§ 135.39(a) and (b) object to requiring the director of operations and the chief pilot to hold an Airline Transport Pilot (ATP) certificate. Most of these comments are from small operators or operators who are not authorized to operate under IFR. Not all types of operations require an ATP certificate (see § 135.243(a)). ATP certificates are required for the pilot in command in passenger-carrying operations of turbojet airplanes, multiengine airplanes operated by commuter air carriers and airplanes with a passenger seating configuration, excluding any pilot seat, of 10 or more. The pilot in command of any other operation must hold only a commercial pilot certificate with an instrument rating. The same concept that applies to pilot in command standards should apply to management personnel qualifications.

The director of operations must hold or have held a pilot certificate equal to the chief pilot's for the operations the certificate holder conducts. Although the pilot certificate an individual holds does not reflect the person's management capability, the holder of an ATP certificate has the broader operational background necessary for a more complex operation. Thus, if the certificate holder conducts any operation requiring the pilot in command to hold an ATP certificate, then the director of operations and the chief pilot must have an ATP certificate. If the certificate holder does not conduct an operation requiring the pilot in command to hold an ATP certificate, then the director of operation and the chief pilot must have only a commercial pilot certificate.

Some commenters claim requiring the director of operations to hold an ATP certificate precludes the use of highly qualified persons who cannot meet first-class medical certification requirements. These commenters suggest the rule allow a person to serve as director of operations if that person has held an ATP certificate in the past. This comment has merit and the rule is changed to allow that.

Many commenters object to requiring both the director of operations and chief pilot to "know" the contents of the manual. They claim this implies that the person must be able to quote the manual verbatim. They state the rule may create liability problems. They recommend the word "familiar" be used instead of "know". The director of operations and the chief pilot should have a good working knowledge of the manual contents and be more than merely "familiar" with it. A larger and more complex certificate holder normally has a director of maintenance who meets the qualifications of § 135.39(c) even when the certificate holder has no maintenance facility and accomplishes its maintenance under contract. The management responsibility is sufficiently complex to require this standard to be met unless the certificate holder shows that a deviation would not compromise safety.

Many commenters on § 135.39(b)(3) state that requiring the director of maintenance to have 1 year of current experience in the "type" of aircraft used by the certificate holder is burdensome. Under Part 1, "type" means make and model. The make and model of aircraft used in air taxi operations are changed frequently. The comments have merit and the words "category and class" are substituted for the word "type."

§ 135.43 *Crewmember certificate: International operations: application and issue. (Proposed § 135.45.)*

Commenters object to § 135.43 because it is unnecessary and requires additional paperwork. There is an increasing amount of international activity by U.S. air taxi operators. The crewmember certificate is a convenient means to identify U.S. crewmembers. The certification process is brief and is not necessary unless the operator believes that it would benefit crewmembers. A similar system exists in Part 121. However, the proposed rule requires reissuance of a certificate at the conclusion of each assignment. Section 135.43(c) is revised to allow the crewmember to retain the certificate until employment with the certificate holder terminates. Also, § 135.43(c) allows the holder to submit the certificate for cancellation to the Airman Certification Branch, Oklahoma City, Okla.

SUBPART B—FLIGHT OPERATIONS

§ 135.63 *Recordkeeping requirements. (Proposed § 135.49.)*

Most commenters on § 135.63 oppose it. They mainly object to flight and duty time recordkeeping under § 135.63(a)(4)(vii) contending that the rule is too stringent, cannot be equally enforced, is structured for air carrier operations, should not apply to on-demand operators, and imposes an undue burden on certificate holders having two or more pilots. Since flight and duty time limitations proposals have been deferred, associated changes in recordkeeping requirements are also deferred.

The commenters do not cite adequate examples in support of their position. A primary objective of the rule is to produce the minimum records needed for the FAA to objectively judge compliance with the Federal Aviation Regulations and thus ensure safety in Part 135 operations. These records also provide information that is necessary to conduct daily operations to schedule crews and maintenance and to conduct other activities where current data is needed to operate safely. The rule requires some additional recordkeeping, but that is justified by the broader scope of air taxi operations under revised Part 135. This is minimal and is not an undue burden. It is necessary for operators to maintain a safe operation and for the FAA to monitor the operator and to conduct surveillance.

Other commenters object to extending the record retention period to 12 months in § 135.63(b). These comments have merit. The pilot records specified in § 135.63(a)(4) must be kept for at least 12 months to establish a continuity for dates and results of competency and proficiency checks. Some pilots used in Part 135 operations must take competency checks only once in each 12-month period under § 135.293(b). A record is necessary to establish that they have accomplished the required check until the next check. Section 135.63(b) is changed to require retention of § 135.63(a)(3) records for at least 6 months and § 135.63(a)(4) records for at least 12 months.

Commenters on § 135.63(c) and (d) object to preparing a load manifest for multiengine aircraft. They also object to mailing (at the takeoff airport) a copy to the certificate holder or retaining a copy at the airport until completion of the flight. They argue that this generates more paperwork and that many airports have neither mail facilities nor a place to keep a copy of the manifest. Safety requires preparation of a load manifest for multiengine aircraft. The loading characteristics are critical for many multiengine aircraft now in use, or that will be used under revised Part 135. Requiring a load manifest be completed before each takeoff ensures that critical loading factors for multiengine aircraft are reviewed and the maximum weight and center of gravity are within approved limits. Because the mailing or retention requirement may impose a hardship on some certificate holders, that requirement is deleted. The last sentence of proposed § 135.63(c)(5) is revised to be consistent with the first sentence ("to a loading schedule or other approved method"). Also, § 135.63(a)(4)(i) is revised to be consistent with Subpart G.

§ 135.65 *Reporting of mechanical irregularities. (Proposed § 135.53.)*

Several commenters on § 135.65 state that they would welcome a rule patterned on §§ 121.563 and 121.701, but many of their objections also would apply to those sections. Several commenters want an explanation of the difference between a maintenance "log" under § 135.65(a), (b), and (c) and a maintenance "record" under § 135.65(d). The maintenance "log" is a maintenance "record" as the term is used in § 135.65(d).

Other commenters contend that the rule requires the keeping of duplicate aircraft records. Section 135.65 governs the recording, deferral, and correction of mechanical irregularities on aircraft used under Part 135. The rule provides appropriate flight and maintenance personnel with a record of the continuing mechanical performance of the aircraft. Section 135.3(a) applies § 91.173 to operations under Part 135. Thus, §§ 91.173 and 135.439 collectively govern all inspections, maintenance, repairs, and alterations under Part 135.

Some commenters contend that § 135.65(d) means that the maintenance "log" must be kept aboard an aircraft "forever." Section 135.65(d) requires only that each certificate holder must have a procedure in its manual for keeping copies of the maintenance log in the aircraft. It is intended that this procedure provide for presence in the aircraft of maintenance information necessary for safe operation of a particular flight. It is not intended that unnecessary information be retained in the aircraft.

Several commenters contend that requiring small operators to keep detailed records is a significant burden. No substantial evidence was presented to support that claim. The rule increases the awareness of the certificate holder and its flight and ground personnel concerning the mechanical performance of each aircraft. This rule assists the certificate holder in executing its primary responsibility for maintaining its aircraft in an airworthy condition and in accordance with its manual. This rule also helps ensure that mechanical irregularities are noted and corrected without delay.

Several commenters object to § 135.65(b) requiring a flight crewmember to log each irregularity noted and then to look at the same irregularity after landing. The rule is changed to eliminate that. Several other commenters suggest that the words "before each flight" be used in § 135.65(b) and this change also is made. Section 135.65(c) is revised to clearly require a description of the recordation, deferral, or corrective action taken as to a mechanical irregularity in accordance with Part 43. Section 135.65(d) is revised to clearly require the aircraft maintenance log to be carried on board the aircraft to which it applies.

§ 135.67 *Reporting potentially hazardous meteorological conditions and irregularities of communications or navigation facilities. (Proposed § 135.55.)*

Almost all commenters on § 135.67 oppose it but agree that it represents good operating practice. They suggest that a good operating practice should not be a regulation but rather a part of the Airman's Information Manual or an advisory circular. Several commenters contend that § 91.125 makes § 135.67 unnecessary. Section 91.125 applies only to flight under IFR in controlled airspace. Section 135.67 applies to all operations conducted under Part 135. The rule enhances safety and is consistent with the effort to improve the level of safety in Part 135 operations. A similar rule, in Part 121, works to ensure that these conditions and irregularities are reported and no problems of compliance exist.

§ 135.69 *Restriction or suspension of operations: Continuation of flight in an emergency. (Proposed § 135.57.)*

Commenters on § 135.69(b) recommend that the rule allow a flight to continue toward an airport when the certificate holder or the pilot in command has reasonable assurance that the hazardous condition will be corrected by the estimated time of arrival and that a suitable alternate airport is available to the flight. Another commenter contends that a routine occurrence (for example, a deer on the runway) will give rise to an "emergency" and a report would have to be filed under § 135.19. The first comment has merit if continuation of the flight does not constitute an emergency under § 135.19. However, an alternate airport is not necessary in this situation. Section 135.69(b) is revised to allow this. The change also resolves the concerns of the second commenter.

§ 135.75 *Inspectors credentials: Admission to pilots compartment: forward observer's seat. (Proposed § 135.63.)*

Commenters on § 135.75 are concerned that FAA inspectors would, without notice, "bump" revenue passengers or cause cargo to be removed from the aircraft to accommodate them. They are needlessly alarmed. Proposed en route inspections are coordinated with the certificate holder well ahead of the proposed schedule to avoid, if at all possible, the need for an inspector to occupy a revenue passenger seat. For the FAA to properly discharge its responsibilities to the public, however, FAA inspectors must have the authority for access to the pilot compartment of an aircraft operated under revised Part 135.

Some commenters on § 135.75(a) believe that a provision like § 121.547 should be added to indicate that the pilot in command has the authority to exclude any person from the flight deck in the interest of safety. This comment has merit and § 135.75(a) is changed to reflect that.

Some commenters on § 135.75(b) believe the words "appropriate communications equipment" provided for the inspector, mean complete transmitting and receiving capability. They suggest that the language be changed to require only equipment necessary to monitor ATC communications. Section 135.75(b) makes it clear that either a headset or a speaker for the inspector to monitor crew communications is required but that a transmitter is not.

§ 135.77 *Responsibility for operational control. (Proposed § 135.65.)*

Many commenters on § 135.77 ask what the term "operational control" means. "Operational control" is defined in Part 1. Section 135.77 states that the certificate holder is responsible for operational control, but may delegate authority to exercise operational control to another person. This delegation of authority does not relieve the certificate holder of the responsibility for operational control.

Some commenters object to listing each person who exercises operational control for the certificate holder. Operational experience under Part 121 shows that this does not lead to an unreasonable number of revisions to manuals.

One commenter states that § 135.77 appears to be more stringent than § 121.537. Section 121.537 requires supplemental air carriers and commercial operators to list each person authorized to exercise operational control, just as § 135.77 does. Section 135.77 is clarified to require the name and title of each person authorized by the certificate holder to exercise operational control to be listed in the manual.

Several commenters believe that authority to exercise operational control confers a labor provision but did not explain their position. The FAA has reviewed this provision in light of this comment. This section provides that the certificate holder is responsible for operational control and must list in the manual the name and title of each person authorized to exercise operational control. The rule does not restrict the certificate holder's exercise of judgment in determining who is authorized to exercise operational control.

§ 135.81 *Informing personnel of operational information and appropriate changes. (Proposed § 135.69.)*

Many commenters on § 135.81 object to proposed paragraph (b). They state that the rule is unacceptable and unmanageable. Some commenters argue the rule will increase the operator's liability but do not explain why. Other commenters suggest changes to make the rule more acceptable. These comments have merit because Part 135 does not contain flight following rules and there is no practical means to update the information once a flight departs. Proposed paragraph (b) is withdrawn. Section 135.81(a) is changed to allow use of chart supplements in Alaska and the Pacific instead of the Airmen's Information Manual. Section 135.81(c) is revised for consistency.

§ 135.85 *Carriage of persons without compliance with the passenger-carrying provisions of this Part. (Proposed § 135.73.)*

Commenters on § 135.85 suggest that proposed paragraph (b) read, "company employee." This comment has merit and the narrow change suggested gives greater flexibility to the operator without compromising safety. The words, "or other employee of the certificate holder" are added to § 135.85(a) and proposed paragraph (b) is withdrawn.

Commenters recommend additional categories of persons who could be carried aboard an aircraft without meeting the passenger-carrying requirements of Part 135. Additional exceptions to passenger-carrying requirements beyond the limited exception made above would not be in the public interest and would compromise safety.

§ 135.87 *Carriage of cargo including carry-on baggage. (Proposed § 135.75.)*

Two commenters on § 135.87 object because the rule applies to "any" aircraft. One suggests the section apply to aircraft carrying 10 passengers or more. The other suggests the section apply to aircraft carrying 20 passengers or more. Section 135.87 applies to any aircraft carrying cargo, including carry-on baggage, under Part 135. The ability to store carry-on baggage in the passenger compartment of an aircraft certificated under Part 25 often is greater than the ability to store carry-on baggage in the passenger compartment of an aircraft certificated under Part 23. Loose items in the aisle or at the passenger's feet during flight under Part 135 are a potential hazard to occupants of the aircraft in the event of an emergency evacuation.

One commenter objects because the rule is "unrealistic and mechanically impossible because of seat size and design" in small aircraft. If the seat size or design of an aircraft makes the storage of carry-on baggage items beneath the seats on that aircraft impossible or impractical, then those items may not be placed beneath the seats. If the aircraft seat size and design allows the storage of carry-on baggage items beneath the seat, then the certificate holder may allow under-seat storage. If this is done, then the seats must be fitted with a means to prevent articles stowed under them from sliding under crash impacts severe enough to produce the ultimate inertia forces specified in the emergency landing condition regulation under which the aircraft is certificated. The certification criteria in both §§ 23.561 and 25.561 require consideration for forward, sideward and downward motion. Part 135 does not require use of the under-seat area for stowing carry-on baggage, but that is allowed if the stated conditions are met. The rule is changed to clearly reflect its applicability to carry-on baggage. Also, the word "forward" is deleted in § 135.87(d).

One commenter states that it knows of no occasion in which the aisle of an aircraft was blocked by the placement of carry-on baggage. This commenter also states that it is difficult to believe that carry-on baggage could or would hinder the emergency evacuation of a small aircraft such as a four-passenger single-engine airplane. Section 135.87 ensures that occupants aboard an aircraft are afforded the highest safety protection reasonably commensurate with the least possible burden. Passengers of an aircraft operated under Part 135 should not needlessly be injured by unstowed items and should be able to exit the aircraft as rapidly as possible in the event of a survivable accident. Proper stowage of articles can prevent injuries from flying objects during air turbulence. Section 135.87(c)(1) is changed to distinguish between securing cargo and securing carry-on baggage.

One commenter states § 135.87(e) is unclear and recommends deletion. The rule has been reviewed and it is clear. It prohibits persons from loading cargo in a way that prevents a crewmember from extinguishing a fire in flight.

§ 135.89 *Pilot requirements: Use of oxygen. (Proposed § 135.77.)*

Some commenters oppose combining the requirements for pressurized and unpressurized aircraft. They urge retaining the current requirements. Inherent differences exist in operating characteristics between pressurized and unpressurized aircraft. A distinction should be made between them. Current § 135.77 contains requirements for pilot's use of oxygen and current § 135.129 contains oxygen equipment requirements. Both have separate provisions for pressurized and unpressurized aircraft. Section 135.89 is revised to carry forward this distinction, is limited to the use of oxygen only for pilots and the title is changed. Passenger oxygen equipment requirements are adopted in § 135.157.

Two commenters state § 135.89 should require that at least one pilot must wear an oxygen mask whenever a pressurized aircraft is operating above flight level 350. They cite the potential for rapid depressurization in a relatively small volume aircraft. This comment has merit and § 135.89 remains essentially the same as the current § 135.83.

§ 135.91 *Oxygen for medical use by passengers. (Proposed § 135.79.)*

One commenter on § 135.91 believes the rule should require maintenance of liquid type oxygen only. The problem of possible internal contamination exists with both liquid and gaseous oxygen containers.

One commenter on § 135.91(a)(1)(i) suggests that the rule require the equipment to be both an approved type and in conformity with Title 49 CFR because more than one standard appears to be required. Another commenter states § 135.91(a)(1)(i) was not necessary. The rule is more flexible because the certificate holder may either get FAA approval or meet the requirements of Title 49 CFR Parts 171, 172, and 173, except § 173.24(a)(1). Either standard of safety is acceptable for the safe carriage and operation of medical oxygen.

§ 135.93 *Autopilot: Minimum altitudes for use. (Proposed § 135.81.)*

Some airplanes with autopilots do not have, and are not required to have, an airplane flight manual. To reflect this, the words "approved airplane flight manual or equivalent" are used in § 135.93. The words "en route" are deleted from § 135.93(a) because the rule applies to all operations other than approaches.

The rule is rewritten for clarity. Proposed paragraphs (b)(1), (b)(2), and (c) are adopted as §§ 135.93(b), (c), and (d), respectively. Section 135.93(b) provides for instrument approaches other than ILS. Section 135.93(c) provides for ILS approaches with an approach coupler.

§ 135.95 *Airmen: Limitations on use of services. (Proposed § 135.83.)*

Nearly all of the commenters on proposed paragraph (a)(2) oppose it because it is redundant and because it duplicates §§ 61.3(a) and (c). They argue that requiring a certificate holder to inspect a pilot's certificate before each operation is unreasonable and will be difficult, if not impossible, to administer. These comments have merit and proposed paragraph (a)(2) is withdrawn.

§ 135.103 *Exception to second in command requirement: IFR operations. (Proposed § 135.91.)*

Commenters on § 135.103 state that it is not understandable, needs to be revised or withdrawn completely, is inappropriate for multiengine aircraft and is frequently abused. The comments of the National Transportation Safety Board cite the field investigation phase of the Board's "Air Taxi Study (NTSB-AAS 72-9). The Board's comments are similar to others. The Board recommends that § 135.103 either be removed from the rules or rewritten so it is not misunderstood or misapplied.

Current § 135.75 provides flexibility to Part 135 operators by allowing limited IFR operations without a second in command. Experience under Part 135 shows these operations can be conducted safely. The rule continues to allow them. The comments recommending clarification of this rule have merit. Section 135.103 is rewritten to make it clearer, simpler, and easier to meet. This should make flight planning easier. Sections 135.103(a), (b), and (c) contain the rules for takeoff, en route and approach operations, respectively. Section 135.103(d) contains the general requirements for the aircraft, pilot and ATC clearances.

Section 135.105(a) is clarified to reflect that a second in command is always required under §§ 135.99 and 135.105.

§ 135.105 *Exception to second in command requirement: Approval for use of autopilot system. (Proposed § 135.93.)*

One commenter on § 135.105 claims the use of an autopilot is no substitute for the increased safety margin two pilots afford for communications, navigation, system monitoring and emergency situations, especially in multiengine aircraft. Section 135.105(c)(2) requires each certificate holder to show that operations using an autopilot can be conducted safely. The commenter presents insufficient evidence of adverse operational experience in single-pilot operations with an autopilot to justify withdrawal of the rule.

One commenter objects to § 135.105(b) because the operations specifications must be amended each time there is a change in aircraft. The commenter believes this is unnecessarily complicated. This comment has merit and that part of § 135.105(b) is withdrawn.

§ 135.109 *Pilot in command or second in command: Designation required. (Proposed § 135.97.)*

Although adoption of Subpart F is deferred as discussed there, proposed § 135.215(a) is more germane to flight operations than to flight time limitations. The rule is adopted as § 135.109(b).

§ 135.115 *Manipulation of controls. (Proposed § 135.103.)*

Several commenters on § 135.115(a) suggest that a pilot who manipulates the controls should be qualified in that aircraft. This comment has merit and § 135.115(a) is revised.

One commenter on § 135.115(b) asserts a pilot in command cannot determine whether an authorized safety representative of the Administrator can safely handle the controls of an aircraft. The pilot in command may make any reasonable inquiries which are deemed necessary to ascertain pilot qualifications. Another commenter contends that a safety representative of the Administrator should not manipulate the controls during a passenger-carrying flight. Section 135.115(b) is similar to § 121.545(b) which has not created any problems since it was adopted in 1967.

One commenter opposes the rule because the pilot in command should ensure no unauthorized person manipulates the controls. Another commenter suggests the rule allow a prospective aircraft purchaser who is appropriately rated to manipulate the controls. Safety requires strict control of these actions during those flights and additional exceptions are not justified.

One commenter asks what "qualified in the aircraft" means. A person is qualified in the aircraft if that person holds a pilot certificate with the appropriate category, class, and type rating for the aircraft operated and also meets the recency of experience requirements for that aircraft.

§ 135.117 *Briefing of passengers before flight. (Proposed § 135.105.)*

Most commenters on § 135.117(a) object to the word "orally" and assert that printed briefing cards are satisfactory and do not compromise safety. Commenters also contend the rule is more restrictive than Part 121 but present no other rationale. Part 121 requires oral briefing of passengers before takeoff. An oral briefing ensures that passengers are adequately informed of basic information essential to their safety.

Other commenters are concerned that §§ 135.117(a)(4),(6), and (8) mean that actual demonstrations are required to show the mechanical means for opening doors and exits, the use of flotation gear, and the operation of fire extinguishers. Section 135.117(a) requires only that the pilot in command ensure that passengers are orally briefed.

Two commenters state the rule should use the word "crewmember" instead of "pilot in command." The pilot in command is responsible for the operation and safety of the aircraft during flight time. The pilot in command should also be responsible for the briefing before the flight.

The National Transportation Safety Board states that the rule should require both oral briefings and printed cards. The information required under § 135.117(c)(1) and (2) should be available in the form of printed cards to ensure clear communication of detailed information. The Board's comments have merit and § 135.117(c) is changed to accomplish this.

Other commenters note that "10,000 feet" in § 135.117(a)(7) should be "12,000 feet" for consistency with other rules in Part 135. The comment has merit and the rule is changed.

§ 135.121 *Alcoholic beverages. (Proposed § 135.109.)*

Proposed paragraph (d) requires operators to report within 5 days certain incidents under § 135.121. The requirement was established in current § 135.115 to enable the FAA to determine if changes to the rule would be needed to control the conduct of passengers. The report has served its purpose and is no longer necessary. Proposed paragraph (d) is withdrawn.

§ 135.123 *Emergency and emergency evacuation duties. (Proposed § 135.113.)*

Most commenters object to the words "shall show" in § 135.123(a) because showing each emergency function can be accomplished is unreasonable and impractical. This comment has merit and the word "ensure" is substituted for the word "show." Proposed paragraph (b) is withdrawn because it duplicates § 135.21(b)(13).

SUBPART C—AIRCRAFT AND EQUIPMENT

§ 135.143 *General requirements. (Proposed § 135.117.)*

The few commenters on § 135.143(b) were confused by the words "for single engine aircraft." These words are unnecessary and are deleted. However, § 135.179 provides for a minimum equipment list for multiengine aircraft and that is an exception to § 135.143(b). To make that clear, the lead-in phrase of that paragraph is changed to read: "Except as provided in § 135.79, no person may operate an aircraft * * *".

§ 135.145 *Aircraft proving tests. (Proposed § 135.121.)*

The language of §§ 135.145(a) and (c) is not parallel. To correct this, the phrase "is not considered to be of similar design" is used in § 135.145(c) instead of the phrase "is considered to be materially altered in design." Also, proposed paragraph (d) is obsolete and is withdrawn.

§ 135.149 *Equipment requirements: General. (Proposed § 135.125.)*

A few commenters oppose requiring a third attitude gyro for turbojet airplanes because it is an unacceptable economic burden and it is unnecessary when the aircraft already has two of them, each on a different power source. The third attitude gyro is necessary to provide a margin of safety not otherwise available if the primary instrument system fails. This requirement is retained. Section 135.149(c) is revised to make clear that this third instrument must be electrically powered.

Other commenters object to requiring a lockable door. They state that a locked door has not deterred hijackers of large, air carrier aircraft and that a locked door reduces the possibility of safe egress of passengers under certain conditions after an accident. After reviewing the cost of installing the lockable door against the resulting benefits, the FAA is persuaded that the requirement does not contribute significantly to safety in Part 135 operations. The interior design of some aircraft makes installation difficult and expensive to complete. Although the proposal is withdrawn, the FAA encourages operators to not remove a lockable door now installed and to continue to use it.

One commenter suggests that the public address system requirement should apply only to operators of multiengine aircraft under 14 CFR Part 298. Another commenter believes that the distinction should be at the 10 passenger seat level, not at the 19 passenger seat level. Amendment 121–105 (38 FR 21493; Aug. 9, 1973) requires airplanes having a passenger seating capacity of more than 19 to be equipped with an approved public address system and interphone system. Under current § 135.2, this amendment applies to Part 135 operators using large airplanes that have a passenger seating capacity greater than 19. Section 135.149(d) achieves consistency in Part 135 by not differentiating between small and large aircraft but by using a 19 passenger seating configuration as the dividing point. In smaller aircraft, the crew can easily communicate with the passengers without the use of a public address system and interphone system.

One commenter expresses concern that § 135.149(e) is too open-ended, allows individual FAA inspectors to make arbitrary decisions, and gives them unlimited authority to require any type equipment. The rule gives the Administrator flexibility to require any additional equipment which is necessary in the interest of safety. Specific guidance is furnished to FAA inspectors about the administration of § 135.149.

§ 135.151 *Cockpit voice recorders. (Proposed § 135.125.)*

The majority of commenters strongly oppose requiring a cockpit voice recorder (CVR) and a flight data recorder (FDR). The reasons they cite are: The CVR and FDR impose unacceptable economic burden; they cause aircraft to be out of service during equipment repair; and they provide information for accident investigations "after the fact" and thus do not enhance the safety of a particular flight.

On the other hand, the National Transportation Safety Board recommends that the CVR and FDR requirements should apply to all aircraft capable of carrying 10 or more passengers. The Board states that the data obtained from the CVR and FDR has enabled it to determine the causes of airframe and system failures, environmental effects and operational deficiencies. The Board states that this has led to corrective actions in operational and air traffic control and in product design. The Board mentions that the inability to accurately determine the cause of an accident may result in liability to the manufacturer, the operator, or the Federal Government. One commenter supports the CVR and FDR for scheduled commuter operators because of the importance these devices have in determining the probable cause of an accident. Another commenter believes the CVR has more potential usefulness in accident investigations.

Certain benefits could be realized by the use of the CVR and FDR. The commenters cite no accidents involving commuter aircraft or aircraft capable of carrying 10 or more passengers in which the FDR and CVR information was essential to determining the probable cause of the accident. Experience during accident investigation shows the flight path of an aircraft can be duplicated without the aid of FDR data. On the other hand, CVR recordings provide information about crewmember actions in the pilot compartment before the accident and this record is not otherwise available. Also, CVR equipment is lighter in weight and less costly than FDR equipment.

Considering all the comments received, the justification submitted opposing the FDR requirement, and an analysis of the costs versus benefits, safety of flight is not compromised by withdrawing the requirement for a FDR. However, considering the comments, justification and cost versus benefits of the CVR, and the fact that the CVR provides an acceptable level of accident investigation information for turbojet airplanes with 10 or more passenger seats, the requirement for the CVR is retained in new § 135.151.

§ 135.153 *Ground proximity warning system. (Proposed § 135.125.)*

The majority of the comments received oppose the requirement for a ground proximity warning system (GPWS) because it is not justified based on benefit versus cost. They also state the GPWS has a history of poor performance. One commenter states that all commuter aircraft should be equipped with a GPWS. Another commenter states that a GPWS should be required on all aircraft capable of carrying 10 or more passengers, not just turbojet airplanes of that size.

The GPWS of today reflects the state-of-the-art. Reliable systems are available and their maintenance should pose no significant problem or require excessive downtime. Further, the GPWS contributes directly to the safety of flight. Experience demonstrates that the GPWS is beneficial as a warning device for crews to avoid accidents in large aircraft operations under Part 121. Because of the complexity, size, speed, and flight performance characteristics of turbojet airplanes, a GPWS is required for turbojet airplanes with 10 or more passenger seats in new § 135.153. To give more flexibility to the certificate holder, § 135.153(b) allows the use of an alternate warning system to that approved under § 37.201. The alternate system must have the approval of the Director, Flight Standards Service.

Although limited benefits might be realized by requiring the GPWS in all aircraft, installation of the GPWS in smaller aircraft is not warranted at this time based on the cost of installation, maintenance, and operating weight penalties.

§ 135.155 *Fire extinguishers: Passenger-carrying aircraft. (Proposed § 135.127.)*

Most commenters on § 135.155 object to requiring two fire extinguishers in aircraft having a passenger seating configuration of more than 6 but less than 31. Operators now using aircraft carrying six passengers state that the cabin configuration gives the crew easy access to the passenger area in an emergency. The majority of the commenters state that the rule should require two fire extinguishers on-board an aircraft with a passenger seating configuration of 10 or more. Some commenters observe that only one fire extinguisher is needed if it is accessible to both crew and passengers. Others believe the rule should specify the least toxic agent must be used. Comments received on a proposed amendment to current § 135.161 in Notice 76-28 (41 FR 56280; Dec. 27, 1976) were also considered.

Only one fire extinguisher is necessary on an aircraft having a passenger seating configuration of nine or less. It is accessible to passengers or the crew in this size aircraft. However, safety requires two fire extinguishers on an aircraft having a passenger seating configuration of 10 or more, so the extinguishers are readily accessible to crewmembers or passengers.

The matter of toxicity is best left to the judgment of the operator. Many different extinguishing agents exist. Each has its own distinct advantages. With proper procedures and precautions, some toxic fire extinguishing agents can be used effectively. Of course, there is control because the FAA approves the type of fire extinguisher used.

§ 135.157 *Oxygen equipment requirements. (Proposed § 135.129.)*

Some commenters oppose combining the requirements for pressurized and unpressurized aircraft. They urge retaining the current requirements. The commenters also state that if the rule is adopted, certain pressurized aircraft now in service would require costly modifications which are not justified in the interest of safety. Inherent differences exist in operating characteristics between pressurized and unpressurized aircraft. A distinction should be made between them. Current § 135.77 contains requirements for pilot's use of oxygen and current § 135.129 contains oxygen equipment requirements. Both have separate provisions for pressurized and unpressurized aircraft. Section 135.157 is revised to carry forward this distinction.

Several commenters object to requiring pressure demand oxygen breathing equipment. Other commenters note the rule includes design criteria for oxygen systems already included in Parts 23 and 25. The requirement should not be in the operating rules and it is withdrawn.

Numerous commenters object to requiring supplemental oxygen for each passenger above 12,000 feet MSL. These comments have merit and § 135.157(a) is revised to require that 10 percent of the occupants (other than a pilot) must have supplemental oxygen between 10,000 feet and 15,000 feet MSL. Each occupant (other than a pilot) must have supplemental oxygen above 15,000 feet MSL. This parallels current §§ 121.327 (c) and 121.329(c).

Section 135.157(b)(1) is adopted in this subpart instead of in § 135.89 because it is a passenger oxygen equipment requirement.

One commenter states § 135.157(c)(3), which allows the flight crewmembers to use undiluted oxygen at their discretion, requires the replacement of crew masks. The commenter claims this is an unreasonable burden. Allowing the flight crewmember to select undiluted oxygen may be a burden to an operator who now uses continuous flow systems which do not have this design feature. However, the potential need for the pilots to select undiluted oxygen is significant at altitudes above 25,000 feet. Thus, § 135.157(c)(3) requires the oxygen equipment to have a means to allow the pilots to use undiluted oxygen at their discretion at altitudes above 25,000 feet.

§ 135.159 *Equipment requirements: Carrying passengers under VFR at night or under VFR over-the-top conditions. (Proposed § 135.131.)*

Most commenters on § 135.159 oppose applying the gyroscopic instrument (gyro) requirement to helicopters. They cite the economic burden resulting from the acquisition, installation, and maintenance of gyros which are not now required for helicopter VFR operations. Only a relatively small percentage of the helicopter operators conduct VFR night or over-the-top operations. The cost of this additional equipment would not be large because of the small number of aircraft affected. The installation cost for each helicopter is not high.

Some commenters note that the history of helicopter operations does not support this rule. To provide an acceptable level of safety in passenger-carrying operations, a helicopter must be controllable during loss of visual ground reference.

New § 135.159(f) is added for clarity and contains the last sentence in paragraph (e)(3) proposed in Notice 77-17.

§ 135.161 *Radio and navigational equipment: Carrying passengers under VFR at night or under VFR over-the-top. (Proposed § 135.133.)*

Most commenters on § 135.161 oppose requiring radio and navigational equipment for helicopters operating under VFR at night. They claim that the limited range of helicopter operations makes radio and navigational equipment unnecessary for safety and that the acquisition and installation of that equipment is an undue economic burden. The requirement for radio navigational equipment for helicopter VFR night operations is not necessary and § 135.133 is changed to reflect that. However, helicopter VFR over-the-top night operations must be equipped with proper radio and navigational equipment to provide an appropriate level of safety in passenger-carrying operations.

§ 135.163 *Equipment requirements: Aircraft carrying passengers under IFR. (Proposed § 135.135.)*

One commenter on § 135.163 notes that an acceptable practice is to mount generators on the main transmission of helicopters, rather than on the engine. Section 135.163(g) is revised to allow this.

Other commenters state that § 135.163 prohibits "splitting" gyro instruments between electrical and vacuum sources and that defeats safety. For instrument panels with both electric and vacuum instruments, a pump or generator is unable to drive all gyroscopic instruments. The pilot must be able to select an energy source which will drive all gyros if the other source fails. Anything less under IFR conditions would derogate safety. Where a split panel is desired, each engine must have both a generator and a vacuum pump.

§ 135.165 *Radio and navigational equipment: Extended overwater or IFR operations. (Proposed § 135.137.)*

One commenter on § 135.165 requests relief for inoperative equipment so that a flight does not have to be terminated. The commenter suggests that deviation be allowed or that the minimum equipment list in § 135.179 apply. The equipment in § 135.165 is essential to safe extended overwater and IFR operations. The need for maintaining communications during these operations is essential.

Another commenter states some radio equipment is unable to transmit and receive from at least one ground facility in certain remote areas. This may occur, but safety requires that this communications and navigational capability exist during extended overwater and IFR operations.

One commenter asks why two radio transmitters are required under § 135.165(a)(1) when only one is required under Part 121. Two transmitters are required under Part 121. To provide equipment flexibility, § 135.165(a)(5) no longer requires the navigational receivers to be VOR receivers.

§ 135.167 *Emergency equipment: Extended overwater operations. (Proposed § 135.139.)*

One commenter states that § 135.167(a)(1) should read "an approved life preserver." The word "approved" is added.

One commenter believes that "other flotation means" should not be allowed in place of life preservers. Another commenter states that "other approved flotation devices" derogate safety but provides no rationale. Other flotation means (such as buoyant seat cushions) are approved so safety is not compromised when they are used. The rule clearly requires that a life preserver or other flotation means be easily accessible to the occupants. If a flotation means other than a life preserver is used, it must be readily removable from the aircraft.

§ 135.169 *Additional airworthiness requirements. (Proposed § 135.141.)*

Notice 77-17A (42 FR 56702; October 27, 1977) withdrew proposed paragraph (e). The same day, the FAA issued Advance Notice of Proposed Rulemaking 77-25 (42 FR 56702; October 27, 1977) requesting recommendations concerning possible changes in certification requirements for certain small airplanes used in Part 135 operations.

Proposed paragraph (c) prohibited the introduction of a new small airplane, with a passenger seating configuration of 10 or more, into Part 135 operation after August 19, 1977, unless that airplane was type certificated in the transport category. That proposal is withdrawn at this time. This issue will be considered in the rulemaking based on the public response to Notice 77-25.

For nonpart 25 small airplanes type certificated for 10 or more seats, proposed paragraph (d) prohibited an increase in the passenger seating configuration in Part 135 operations above the number of seats approved for Part 135 service prior to August 19, 1977. As adopted, § 135.169(c) also allows seating increases up to 19 seats, if the airplane is shown to comply with Appendix A. This change allows operators to increase the number of passenger seats in their existing airplanes, but requires them to demonstrate compliance with the additional airworthiness requirements in Appendix A. The rule advances safety in Part 135 operation while not unduly inhabiting the growth of the air taxi industry. The FAA expects to propose rules based on Notice 77-25 in the near future and may be considered further during that rulemaking.

§ 135.171 *Shoulder harness installation at flight crewmember stations. (Proposed § 135.143.)*

A few commenters on § 135.171 suggest that the shoulder harness requirement apply to all operations under Part 135. This alternative was considered during the development of Notice 77-17, but the study revealed this action would have a significant economic impact on Part 135 operators. Therefore, § 135.171 is limited to turbojets and larger passenger-carrying airplanes (10 seats or more). Section 91.33(b)(13) requires each standard category small airplane manufactured after July 18, 1978, to have both front seats equipped with shoulder harnesses. If an airplane is equipped with a shoulder harness, a flight crewmember must fasten the shoulder harness for each takeoff and landing unless the crewmember cannot perform necessary duties with the harness fastened. This applies to all Part 135 operations.

A considerable number of aircraft now in use have shoulder harnesses installed. Other owners are encouraged to install shoulder harnesses since they are a proven safety item. Although it might be desirable to have all Part 135 aircraft meet the standard, § 135.171 is realistic.

For consistency, "front seat" is changed to "flight crewmember station" in § 135.171(a) and "seat" is changed to "station" in § 135.171(b).

§ 135.173 *Airborne thunderstorm detection equipment requirements. (Proposed § 135.145.)*

While some commenters generally support it, most commenters oppose § 135.173(a). They cite the cost of procuring, installing, and maintaining the equipment, the lack of a corresponding increase in safety benefits, and the weight penalty. After considering the cost factors during the development of Notice 77-17, the use of airborne thunderstorm detection equipment was proposed instead of radar. Airborne thunderstorm detection equipment can be installed at a more reasonable cost and it is somewhat lighter than airborne weather radar.

Revised Part 135 authorizes the use of larger, more complex aircraft with a greater passenger-carrying capacity. Despite the objection to § 135.173, requiring thunderstorm detection equipment is justified for these expanded operations. The rule is limited to turbojet and 10 or more passenger multiengine aircraft. They are used in operations that generate millions of revenue passenger miles each year. Thus, a significant segment of the traveling public is benefitted by this advance in safety of flight.

Some commenters misunderstand the applicability of § 135.173(b). This rule applies only to the aircraft described in § 135.173(a). Also, § 135.173(a) allows operators to conduct operations when the equipment is inoperative if current weather reports indicate thunderstorms or other hazardous weather is not expected during the flight. This helps reduce flight cancellations due to equipment problems. To clarify the applicability of § 135.173(b), the words "required by paragraph (a) of this section" are inserted after the word "equipment."

Numerous commenters object to requiring thunderstorm detection equipment for VFR night operations. This equipment is beneficial for night operations because considerable thunderstorm activity occurs at night and this equipment aids in locating hazardous unseen storm activity. This rule contributes to greater safety in operations because it enables the pilot to detect and locate severe adverse weather areas early. The equipment also enables the pilot to avoid these areas or take other action necessary for safety of flight.

Commenters object to applying this rule to helicopter operations. The helicopter is as susceptible to thunderstorm hazards as the airplane if the pilot fails to avoid severe weather areas. Therefore, the rule applies to helicopters.

§ 135.175 *Airborne weather radar equipment requirements. (New.)*

Some commenters on § 135.173 state that airborne weather radar is more appropriate equipment than airborne thunderstorm detection equipment because radar can detect more than thunderstorms. The comment has merit. Aircraft now required under §§ 121.357 and 135.2 to have airborne weather radar equipment installed and operating should continue to meet that requirement. New § 135.175 is added to retain the current requirement for large, transport category aircraft.

§ 135.177 *Emergency equipment requirements for aircraft having a passenger seating configuration of more than 19 passengers. (Proposed § 135.147.)*

The few commenters on § 135.177 have only minor objections. One commenter opposes § 135.177(a)(4) which requires compliance with § 121.310 because that is an economic burden and not practical. Safety would be derogated by deleting the requirement to comply with § 121.310. The safety benefits outweigh the costs. Section 121.310 is not unduly burdensome for the operation of the higher passenger volume airplanes described. Aircraft now operating under Part 135 have a seating capacity of 19 passengers or less.

They do not have to meet § 121.310. The large aircraft that are now operating under Part 121 of this chapter, and that will be operated under revised Part 135 (30 seats or less and payload capacity of 7,500 pounds or less), already comply with § 121.310. New aircraft entering service under Part 135 will comply with § 121.310 as part of their type certification.

Two commenters question the 19 or more passenger breakpoint. Current § 135.54 requires a flight attendant for an aircraft that has a passenger seating capacity of more than 19. The same distinction is appropriate for § 135.177 emergency equipment because a flight attendant is available to operate it.

§ 135.179 *Inoperable instruments and equipment for multiengine aircraft. (Proposed § 135.149.)*

Most commenters fully support § 135.179. This section relieves Part 135 operators of a significant burden without compromising safety. The rule also reduces the potential for unnecessary delays to the traveling public. Part 135 does not now provide for the use of an approved minimum equipment list (MEL) to allow operations under certain conditions with inoperable equipment and instruments. Because of this, Part 135 operators do not have the same operational flexibility as Part 121 operators. This was a significant burden because they were required to make expedited repairs to provide scheduled service. In addition, passengers were delayed because of need to repair or replace inoperable instruments or equipment that was not necessary for the safe operation of a particular flight.

Section 135.179 relaxes that requirement and allows an operator to dispatch aircraft when certain pieces of equipment or instruments are inoperable. The MEL allows them to maintain schedule reliability and still maintains the necessary level of safety. The rule is a significant step forward that benefits both certificate holders and the traveling public.

The FAA Flight Standards Divisions of the region responsible for the type certification of a particular multiengine aircraft will administer the rule. This ensures that each request for an MEL is handled properly and standardization is maintained for each aircraft. The responsible FAA District Office will give guidance to certificate holders about MEL requests and coordinate their approval.

Section 135.179(a)(1) is clarified to reflect the MEL may not include equipment and instruments that are essential for safe operation under all operating conditions and that are required, either specifically or otherwise, for the aircraft to meet the airworthiness standards under which it was type certificated. For instruments and equipment to be included on an MEL, the operator will show that the aircraft can comply with the airworthiness standards with those instruments and equipment inoperable. Proposed paragraph (a)(3) is deleted as unnecessary.

§ 135.181 *Performance requirements: Aircraft operated over-the-top or in IFR conditions. (Proposed § 135.151.)*

Some commenters on § 135.181 indicate the rule is inappropriate and hard to understand. They recommend it be rewritten. The National Transportation Safety Board cites the field investigation phase of its "Air Taxi Study" (NTSB-AAS 72-9) and also states the rule may be misunderstood and misapplied. The Board recommends that § 135.181 (currently § 135.145) be either withdrawn or rewritten so that it cannot be misunderstood or misapplied.

The rule is complex and is difficult to meet because it may be misunderstood. The rule is clarified and simplified in the interest of safety. The change allows an en route IFR operation and an IFR approach at the destination airport if unforecast weather conditions do not allow a VFR operation. The 15-mile distance is changed to 15 minutes of flying time because the 15-mile criterion does not lend itself to the current state-of-the-art and methods for forecasting and reporting weather conditions.

One commenter states § 135.181 is undesirable for helicopter operations because it imposes performance requirements on helicopters which exceed type certification requirements. The increasing number of helicopters certificated for flight under IFR in Part 135 operations justifies their inclusion in this rule. Helicopters must be treated the same as airplanes under these circumstances to ensure safe operation under IFR.

A few commenters are confused by §§ 135.181(c)(1) and (2) for a descent under VFR from an over-the-top flight. Section 135.181(c)(1) allows a multiengine aircraft that cannot meet the single-engine en route climb performance standards to operate over-the-top if adequate weather conditions exist. Section 135.181(c)(2) allows a single-engine aircraft to operate over-the-top if broken clouds exist that enable the aircraft to make an emergency descent clear of clouds when required due to an inoperative engine.

SUBPART D—VFR/IFR OPERATING LIMITATIONS AND WEATHER REQUIREMENTS

§ 135.213 *Weather reports and forecasts. (Proposed § 135.171.)*

Many commenters contend that requiring current weather to be available at an airport where an IFR approach is conducted is unduly restrictive. They argue that this would preclude service to many airports that have approved instrument approach procedures. Several commenters recommend higher approach minimums for airports where weather reports are not available. Others believe the pilot's decision to make the approach should be based only on pilot reports and an area forecast. Some commenters want to allow IFR operations at airports that are clustered within a certain radius of an airport having weather reporting facilities.

The National Transportation Safety Board in *Administrator* v. *Sandoval* (SE-2084) found current § 135.105 is not clear regarding weather requirements at destination airports. Section 135.213 is intended to rectify this problem. Weather observations used for IFR operations at an airport must be taken at that airport to ensure an appropriate level of safety. Section 135.213 ensures that IFR operations are not conducted unless reliable weather information for the specific airport is available to the pilot.

Several commenters suggest that § 135.213 allow the use of U.S. military weather reports and forecasts. The U.S. National Weather Service recognizes only military weather observations and not their forecasts. Thus, use of U.S. military weather sources is not allowed under § 135.213.

One commenter states an experienced commercial, instrument rated pilot is qualified to assume responsibilities for weather observations. The current rules provide for pilot observation for operations under VFR. However, for IFR operations, weather information from persons trained and knowledgeable in weather reporting and forecasting is essential to maintain safety.

A few commenters object to the time needed to investigate and approve each source of weather reporting information and to issue amendments to the operations specifications. They believe this procedure is impractical for on-demand operators. Because of the changing nature of weather conditions and the influence of different geographic locations, amendments to the operations specifications must be contingent upon an investigation. This investigation establishes that the weather conditions at an airport that has no weather reporting facility do not differ significantly from a nearby airport that has a weather reporting facility, and that this otherwise allows a safe operation.

One commenter asks what the term "IFR operations" means in § 135.213. The term "IFR operations" includes operations in VFR weather under an IFR flight plan as well as IFR operations in instrument meteorological conditions.

§ 135.215 *IFR: Operating limitations. (Proposed § 135.175.)*

Several commenters want § 135.215 changed to accommodate on-demand air taxi operations but they did not elaborate. Section 135.215 provides sufficient flexibility for each certificate holder, including an on-demand air taxi operator.

One commenter does not believe § 135.215(c) is meant to require approval for IFR operations and suggests deleting the portion of the last sentence after the semicolon. Section 135.215(c) allows a Part 135 certificate holder to operate under IFR outside of controlled airspace when necessary to use an approved instrument approach or departure procedure or when necessary to climb into controlled airspace during an approved missed approach procedure, if those operations are approved.

One commenter believes the term "IFR" in § 135.215 limits operations to instrument meteorological conditions. That limitation would be difficult to administer. The term "Instrument Flight Rules (IFR)" is not limited to operations in instrument meteorological conditions.

§ 135.219 *IFR: Destination airport weather minimums. (Proposed § 135.179.)*

One commenter states that § 135.219 is unduly restrictive and should be deleted because weather reports and forecasts are not always accurate. While weather conditions can change from those covered in reports and forecasts, § 135.219 is necessary to establish the minimum weather conditions for the destination airport which must exist before IFR or over-the-top operations may be conducted. The only change to the current rule is to include over-the-top operations and to allow the use of weather reports or forecasts, or any combination of them, as an indication of the weather at the next airport of intended landing. This makes the rule more liberal. The current rule requires the use of both weather reports and forecasts without regard to any favorable combination.

§ 135.223 *IFR: Alternate airport requirements. (Proposed § 135.183.)*

One commenter recommends that § 135.223(a)(3) allow helicopter operators to have a 30-minute fuel reserve, instead of the 45-minute reserve now required beyond the alternate airport for all aircraft. The FAA considered making the fuel reserve for IFR operations similar to that for VFR operations in helicopters. Although helicopters are more maneuverable than airplanes, the FAA concluded that the limited experience with helicopters in IFR operations under Part 135 does not warrant reducing fuel requirements at this time.

To clarify the rule, the word "approach" is inserted after the word "circling" in § 135.223(b)(1), and words "instrument approach" are inserted after "circling" in § 135.223(b)(2).

§ 135.225 *IFR: Takeoff, approach and landing minimums. (Proposed § 135.185.)*

One commenter recommends using the phrase "the aircraft has passed the final approach fix," in § 135.225(c)(1) to clarify the rule and this is done.

Two commenters indicate the word "latest" could be interpreted differently as to weather reporting. They recommend using the word "current" in § 135.225. The word "latest" is used elsewhere in the Federal Aviation Regulations and is retained to achieve consistency of interpretation.

Two commenters believe that § 135.225 should be revised to eliminate repetitious use of the phrase "the U.S. National Weather Service, or a source approved by the U.S. National Weather Service, or a source approved by the Administrator." They also believe that current § 135.185(h)(4) should be deleted because it is unnecessary to repeat the same admonition that is given in § 135.227. These changes are made. Also, § 135.225(h)(2) is clarified to reflect that the ground installations (not the airborne equipment) are what "the landing minimums are predicated" upon. The requirements for operable airborne equipment are prescribed in Subpart C.

§ 135.227 *Icing conditions: Operating limitations. (Proposed § 135.187.)*

Many commenters object to prohibiting IFR flights into known or forecast light or moderate icing conditions with present de-icing or anti-icing equipment that is not certificated under Part 23. They stated that the expense of meeting Part 23 is unjustified and would impose an undue economic burden. One commenter suggests a "grandfather" clause for present aircraft. Other commenters believe IFR flight to VFR-on-top should be allowed under known or forecast light or moderate icing conditions. One commenter states the proposed rule is extremely restrictive for helicopters because there is no approved anti-icing or de-icing equipment for main and tail rotor blades.

Based on these comments and after further deliberation, the FAA concludes the proposed rule is unworkable without major changes. Because of their magnitude, the proposed rule is withdrawn at this time and current § 135.85 is adopted as § 135.229. The reference to SFAR No. 23 in §§ 135.227(b) and (c) is changed to the identical provision in Section 34 of Appendix A.

§ 135.229 *Airport requirements. (Proposed § 135.189.)*

Many commenters object to the words "properly equipped" and "facilities and public protection" in § 135.229(a). They contend that this language would place an air taxi operator in the position of qualifying an airport. Other commenters state that the rule would create an economic hardship to some operators and general aviation airports in meeting these requirements, if they mean security, fencing, crash, or rescue. Some commenters state there is not a clear definition of these required items and suggest they be deleted. These comments are accepted and the words are deleted.

Several commenters object to precluding the use of flare pots or lanterns, especially in remote areas where there is no electrical power available. They believe that approving the use of flare pots or lanterns should be left to the discretion of the local FAA District Office or Regional Office. Other commenters recommend allowing the use of reflective material, or at least providing a mechanism for approval of its use in certain operations. A few commenters indicate that proposed paragraphs (b), (c), and (d) are not clear and recommended that current § 135.87 be reinstated.

These comments have merit. Current § 135.87 is retained and proposed paragraphs (b), (c), and (d) are withdrawn. The use of flare pots or lanterns for aircraft operations and reflective material for helicopter operations is allowed for marking the limits of the takeoff and landing areas. The use of flare pots or lanterns must be specifically approved.

One commenter believes the section should continue to apply to the carrying of passengers at night and § 135.229(b) provides for that.

SUBPART E—FLIGHT CREWMEMBER REQUIREMENTS

§ 135.243 *Pilot in command qualifications. (Proposed § 135.193.)*

Several commenters object to § 135.243(a). One commenter contends the airline transport pilot (ATP) certificate requirement is not justified because the Part 135 6-month instrument proficiency check is equivalent to the ATP flight check and the ATP written examination now administered under Part 121 serves no useful purpose in Part 135 operations. Other commenters state that their objection to the ATP requirement would be reduced if the ATP written test were revised to relate it to Part 135 operations. An ATP written exam more closely related to Part 135 operations is appropriate and the FAA is developing one.

Each person who takes the Part 135 instrument proficiency check need not be tested to the extent required for the original issuance of an ATP certificate. While the procedures and maneuvers required for the ATP certificate are included in the instrument proficiency check test, the check is not as extensive or comprehensive as an ATP certificate flight test. The purpose of the periodic instrument proficiency check is to determine that the pilot is competent to continue to be a pilot in command under IFR in Part 135 operations.

A few commenters contend that § 135.243(a) is appropriate for large aircraft but not for air taxi operations conducted in small aircraft. A few commenters object because of the kinds of aircraft operations that are affected by § 135.243(a). This revision of Part 135 makes the operation of certain large aircraft (those of more than 12,500 pounds maximum certificated takeoff weight having a maximum passenger seating configuration of 30 seats or less and a maximum payload capacity of 7,500 pounds or less) subject to the rules of Part 135. The ATP requirement is based on the complexity of aircraft currently in use and those to be approved for operations under revised Part 135, as well as on their passenger-carrying capability. In establishing the need for this requirement, all known relevant factors were considered, including the classification of aircraft operations that are affected by § 135.243(a). Increased safety benefits will be provided by requiring pilots in command of the more complex operations under Part 135 to hold an ATP certificate. A number of commenters state that they now require their pilots in command to possess an ATP certificate for Part 135 operations. There is no indication that this voluntary action to increase the competence level of Part 135 pilot personnel imposes an unnecessary burden on either these operators or their pilots.

Two commenters contend that an ATP certificate is not practical in Alaska and will not necessarily bring about a higher level of safety in the air taxi industry there. There is no reason to distinguish the Part 135 pilot in command requirements in Alaska from the Part 135 pilot in command requirements anywhere else.

One commenter contends that the requirement for an ATP have no resemblance to the kinds of flying conducted by commuter air carrier pilots and that the requirements for an ATP should be postponed until the ATP written test is more appropriate to Part 135 operations. This commenter also recommends that if the requirement for an ATP certificate is adopted, it should be limited to commuter air carriers who hold authority to operate under IFR. The public interest is served by requiring pilots in command of the more complex Part 135 operations to hold an ATP certificate. For this purpose, complex operations are operations conducted in turbojet airplanes, commuter air carrier operations conducted in multiengine airplanes, and operations conducted in airplanes having a seating configuration, excluding any pilot seat, of 10 seats or more. Many of these operations are conducted under IFR into and out of the major terminal areas which have high volume of air traffic. The requirement for ATP certificated pilots in command during these operations is essential to safety.

One commenter suggests that § 135.243(a) be extended to cover all multiengine air taxi operations. That action is unnecessary and not justified at this time. On-demand air taxi operations conducted in nonturbojet multiengine airplanes having a seating configuration, excluding any pilot seat, of nine seats or less are not affected.

Several commenters claim that the hours of flight experience required under § 135.243(b)(ii) are excessive. These requirements are unchanged from the present Part 135 and no reduction is justified.

One commenter claims the requirement for pilots to hold an instrument rating under § 135.243(b)(ii.) is an undue burden. Two other commenters contend that an instrument rating is not practical for many small single-engine airplanes with limited instrumentation and no radios that are operated in VFR conditions. Under current Part 135, minimally equipped aircraft may be operated under VFR day conditions without benefit of either navigational or communications equipment. Sections 135.145 and 135.161 allow those operations to continue. However, a pilot's awareness of significant weather phenomena is enhanced if the pilot holds an instrument rating. Also, the present requirements of Part 61 for a commercial pilot certificate (which is required before a pilot may fly for compensation or hire) include an instrument rating. This requirement is appropriate and necessary to achieve the desired level of safety in operations under Part 135.

Throughout this subpart, the rules are revised to reflect that the certificate holder is held responsible for ensuring the use of a qualified flight crewmembers. For consistency, the words "No certificate holder may use any person, nor may any person serve as * * *" are used in each section.

§ 135.245 *Second in command qualifications. (Proposed § 135.197.)*

Several commenters on § 135.245 generally agree with the rule but object to requiring a class rating. Some of these commenters contend requiring a class rating and recent instrument flight experience places an unreasonable burden on the air taxi industry. There is ample justification for imposing those requirements because they ensure the use of a more competent crewmember as a second in command. Under the rule, any person who acts as second in command of an aircraft is required to hold an appropriate category and class rating. The current rule does not require pilots acting as second in command to hold other than a commercial pilot certificate unless Part 135 requires a second in command. Section 135.245 not only contributes to raising the level of safety in Part 135, but also enhances crewmember qualifications.

One commenter contends that § 135.245 could be inflationary and redundant because § 135.293(b) requires a second in command to demonstrate proficiency in type (for multiengine airplanes). Section 135.245 is substantially the same as current § 135.127 except for the deletion of the words "when a second in command is required by this chapter." The requirement for a second in command to have an instrument rating is consistent with the current requirements of Part 61. The proficiency check requirement in § 135.293(b) is an annual competency check, in contrast to the recent instrument experience requirements of Part 61 which must be met every 6 months.

One commenter states that the rule is more restrictive than Part 121. Another commenter argues that the rule would discourage the use of a second in command when none is required, would result in a lower level of safety, and would cause the loss of valuable training experience for future second in command pilots. These requirements are now in Part 135. They minimize crew errors because more qualified and proficient pilots are used as second in command. The more efficient use of qualified crewmembers does not significantly increase the burden on either the pilot or operator.

§ 135.247 *Pilot qualifications: Recent experience. (Proposed § 135.199.)*

One commenter contends that under § 135.247, a pilot may be current for night landings in a small multiengine airplane by virtue of currency in a large multiengine airplane even though the flight characteristics of the two airplanes are quite different. This comment ignores the initial and recurrent pilot testing requirements of § 135.293. They also must be met in a particular aircraft before a pilot may be used in operations under this Part.

One commenter suggests that § 135.247 should apply only to passenger-carrying operations and should allow the carriage of cargo without the pilot having to make three takeoffs and landings within the preceeding 90 days. This comment has merit and § 135.247(a) is revised.

Two commenters object to requiring the second in command to meet the same recent experience requirements as the pilot in command. They contend that imposes an unnecessary burden on the operator. As stated in Notice 77–17, § 135.247 is patterned on § 61.57, which applies to the pilot in command. Consequently, it was not intended to apply this provision to the second in command. The rule is revised to carry out that intent.

Night recency of experience requirements were inadvertently omitted from § 135.247 (a). Since they are essential to safety and § 61.57(d) does not apply to operations requiring an airline transport pilot certificate, § 135.247(a) is revised to include a night recency of experience requirements.

SUBPART F—FLIGHT CREWMEMBER FLIGHT AND DUTY TIME LIMITATIONS

§ 135.261 *Flight and duty time limitations. (Current § 135.136.)*

The FAA has decided to defer adoption of new flight and duty time limitations governing Part 135 operators. As a result, current § 135.136 is retained and redesignated as § 135.261.

In Notice 78–3 (43 FR 8070; Feb. 27, 1978), the FAA proposed to amend the flight and duty time limitations governing Parts 121 and 123 operators. Notice 78–3 contains many of the same concepts proposed earlier in Notice 77–17 for Subpart F of Part 135. Notice 78–3 has generated extensive public comment. As a result of these comments, and those submitted in response to Notice 77–17 on proposed Subpart F, the FAA has received a considerable amount of information which will be useful in formulating final flight and duty time rules.

The differences which exist between Part 121 and Part 135 operations justify separate rulemaking actions to revise the current flight and duty time limitations. However, some of the concepts involved are fundamental and should be treated consistently. These include the definitions of flight time, duty time, and rest period; the treatment of deadhead transportation; and the method for determining applicable flight and duty time limitations when a flight crewmember serves with more than one flight crew.

Therefore, the public interest is best served by deferring adoption of the Part 135 flight and duty time limitations until the comments on Notice 78–3 are received and evaluated. In this way, the agency would benefit by having additional information, views, and arguments to consider before adopting appropriate final rules governing Part 135 operators.

SUBPART G—CREWMEMBER TESTING REQUIREMENTS

§ 135.293 *Initial and recurrent pilot testing requirements. (Proposed § 135.225.)*

Several commenters support § 135.293. One commenter objects to § 135.293(a) contending the testing of knowledge in each type of aircraft the pilot is authorized to fly will not improve safety. Operational experience shows that knowledge of each type of aircraft in which the pilot is authorized to perform a pilot crewmember function has a direct relationship to the pilot's overall competence and to safety.

One commenter suggests that the term "type" in §§ 135.293(a)(2) and (3) should be defined as it is in § 135.293(b) ("any one of a group of airplanes determined by the Administrator to have a similar means of propulsion, the same manufacturer, and no significantly different handling or flight characteristics"). Section 135.293(b) applies to flight competency checks. The definition of "type" in that paragraph relaxes the Part 1 definition of "type" to contribute to the conservation of fuel. In contrast, §§ 135.293(a)(2) and (3) are written or oral test requirements and the Part 1 definition of "type" is used. To clarify § 135.293(b), a definition of "type" for helicopters is added because the rule applies to both airplanes and helicopters.

One commenter on § 135.293(b) objects to leaving the extent of the competency check to the person conducting the check. This commenter contends that the rule would lead to a wide variance in the checking process, by leaving it to the whim of the local Flight Standards District Office. The standard of performance in § 135.293(d) provides reasonable certainty of pilot competency, allows reasonable latitude in the conduct of the competency check and imposes no undue burden on either the pilot being tested or the operator. Another commenter states that the term "competency check" in § 135.293 (b) and (f) does not mean a "flight check." Section 135.293(b) clearly requires that this competency check be given in an aircraft. Section 135.293(f) allows portions of a required competency check to be given in an aircraft simulator or other appropriate training device if specifically approved.

One commenter suggests that helicopter competency checks be treated the same as competency checks in single-engine airplanes other than turbojets. The commenter argues that all light piston-engine helicopters should be in one "class" and all light turbine-engine helicopters should be in another "class," and that a competency check in "that type of aircraft, if helicopter" should not be required. The handling and flight characteristics of light helicopters are significantly different. The equipment available for them also is considerably different. A separate flight check is necessary to judge pilot competence properly. As additional helicopters become available and standardization of various models is accomplished, competency check requirements will be established similar to those for airplanes.

§ 135.295 *Initial and recurrent flight attendant crewmember testing requirements. (Proposed § 135.227.)*

Notice 77-17 proposed to redesignate current § 135.139 without change. However, that rule does not require flight attendant crewmembers to be knowledgeable and competent concerning the location and operation of other items of emergency equipment, such as megaphone, crash ax, first aid kit, and so forth. The equipment is on board an aircraft to enable flight attendants to respond to an emergency situation and they must be competent to use it. To provide an appropriate level of safety in revised Part 135, § 135.295(e) is amended to reflect that requirement.

§ 135.297 *Pilot in command: Instrument proficiency check requirements. (Proposed § 135.229.)*

Several commenters object to § 135.297(b). They contend that there was no reason to require a demonstration of each approach to be used. Another commenter contends that a pilot who demonstrates the basic instrument approaches during an instrument proficiency check should then be allowed to use derivative approaches. Another commenter recommends that a specific combination of instrument approaches be demonstrated instead of requiring the demonstration of "any type" of instrument approach expected to be used.

These comments have merit. A pilot should not have to demonstrate all possible types of instrument approach procedures before that pilot may use them under Part 135. Section 135.297(b) is revised to reflect that. A pilot who successfully demonstrates separate instrument approach procedures using ILS, VOR, and NDB facilities is considered qualified to conduct all of the published standard instrument approach procedures prescribed under Part 97. A letter of competency is issued to reflect that under revised § 135.297(h). The instrument approach procedures demonstrated must include at least one straight-in approach, one circling approach in conjunction with a VOR or NDB, and one missed approach procedure. Each instrument approach procedure demonstrated must be conducted to published minimum for the procedure.

Pilots who demonstrate competency in at least the combination of instrument approach procedures described are equally competent to conduct other types of approach procedures. This does not apply, however, to the use of microwave landing systems because of the difference in glide slope gradient, instrumentation used and other differences which require a separate showing of competency.

One commenter on § 135.297(c) suggests that the second sentence be deleted and a reference to § 135.293(a)(2) be included instead. There is some similarity between the test areas listed in § 135.293(a)(2) and the test subject matter of § 135.297(c). However, the subjects of these tests are not identical and the two oral or written tests are not given for the same purpose. The test under § 135.293(a) covers subjects which are generally applicable, such as ground training requirements. The test under § 135.297(c) is an equipment test related to operational procedures in which the pilot must demonstrate competency before being used under IFR.

One commenter objects to § 135.297(c)(1) contending that the "procedures and maneuvers set forth for an ATPC (in FAR 61, Appendix A)" is lengthy, many are not appropriate for 6-month instrument checks, and many could not be safely accomplished under IFR. Section 135.297(f) allows the use of a simulator or other appropriate training device for portions of the required flight check. Section 135.297(c)(1) is clarified to ensure that each pilot in command is adequately tested on the procedures and maneuvers for the particular pilot certificate held and the privileges exercised under § 135.243. Also, the requirements of the instrument proficiency check for pilots in command required to hold an airline transport pilot certificate under § 135.243(a) and the requirements for pilots in command required to hold a commercial pilot certificate with an instrument rating under § 135.243(c) are stated in separate paragraphs. Another commenter suggests that the last sentence of § 135.297(c)(1) be deleted. The sentence is deleted because an instrument check is not required when operations are limited to VFR only.

Section 135.297(f) could be interpreted to allow a pilot in command to take the initial instrument proficiency check in a single-engine aircraft and then be authorized to pilot a multiengine aircraft without a check in it until the next 6-month check is due. This paragraph is clarified to reflect that a pilot who is assigned to both single and multiengine aircraft must take the initial instrument proficiency check required by § 135.297(a) in a multiengine aircraft and succeeding checks alternately in single-engine and multiengine aircraft.

§ 135.299 *Pilot in command: line checks: routes and airports. (Proposed § 135.231.)*

Several commenters on § 135.299 argue that recurrent line checks in a Part 135 operation are unnecessary and burdensome. Current § 135.122 covers specific areas not adequately covered by the testing requirements in current § 135.138. Section 135.299 ensures that each pilot used in Part 135 operations accomplishes line checks and that each certificate holder establishes procedures in the manual outlining company policy concerning the manner in which pilots are expected to keep current on routes and airports. The line check requirement is necessary to test the pilot's knowledge of routes and airports and to determine the manner in which the pilot applies company procedures and conducts flight operations.

Several commenters contend that line checks are not appropriate for "on-demand" operators because they do not have a "line operation." Another commenter suggests that all small "on-demand" air taxi operators in aircraft seating less than 10 passengers be exempt from § 135.299. Another commenter suggests that § 135.299 be limited to commuter air carriers as defined in Part 298 of the Civil Aeronautics Board's Economic Regulations (14 CFR Part 298). The broad scope of checks and tests which must be satisfactorily accomplished during a specific period of time by pilots operating under Part 135 is adopted in revised Part 135 because of the many variations in air taxi operations, the qualifications of pilots, and the aircraft used. No single test or check requirement is more or less essential than any other to establish the appropriate level of safety. For these reasons, these checks and tests are considered necessary whether the operator is a single pilot owner-operator, helicopter operator, on-demand air taxi operator or commuter air carrier. They are for the express purpose of ensuring that the pilots in command meet the applicable knowledge and skill requirements for use in operations under Part 135.

One commenter asks how "takeoffs and landings (plural) over at least one route segment" in § 135.299(a)(2) could be accomplished and suggests that the word "segment" be deleted from § 135.299(a)(3). A line check may be as brief or as extensive as the person giving the check deems necessary to determine the pilot's competence. Consequently, more than one takeoff and landing may be needed.

Another commenter objects to § 135.299(a)(3) contending that the proposed requirement for takeoffs and landings at two or more representative airports would be costly for operators in areas of the country where no short routes exist. The commenter suggests that a requirement for takeoffs and landings at "one or more representative airports" would be equally appropriate for VFR line checks. These comments have merit and § 135.299 is revised by combining proposed paragraphs (a) and (b) and requiring takeoffs and landings at one or more representative airports for both VFR and IFR operations. However, for IFR operations, the requirement for at least one flight to be conducted over a civil airway, an approved off-airway route, or any portion of them is retained in § 135.299(a)(3).

One commenter objects to § 135.299(d) and suggests that it be deleted for the reason stated in the preamble to Amendment 135–26 (36 FR 2481, Feb. 5, 1971). A number of other commenters claim § 135.299(d) is redundant because its substance is in § 91.5 and that it would require the pilot to research information that is not readily available. Amendment 135–26 was based upon conditions which existed in 1971. Conditions are sufficiently different today to justify § 135.299(c). The air taxi industry has grown, and, in many cases, has developed into specialized operations such as those of commuter air carrier. Not all air taxi operators would expect to travel to the same destinations. They also may not wish to acquire all available information concerning a flight in the same manner. Section 91.5 is sufficient for routine general aviation operations, but that section is not sufficient for the scope of operations presently conducted under Part 135. Also, § 91.5 is not sufficient for the level of safety in revised Part 135. Section 135.299(c) is intended to require the certificate holder to establish in the manual required by § 135.21 a procedure appropriate to that certificate holder's kind of operations. That procedure should ensure that the certificate holder's pilots who have not flown over a specific route and into a specific airport within the preceding 90 days will become familiar with all available information required for the safe conduct of that particular flight. The list of specific items of information in proposed paragraph (e) is withdrawn because, in some cases, information on each item may not be available.

§ 135.301 *Crewmember: Tests and checks, grace provisions, training to accepted standards. (Proposed § 135.233.)*

Some of the comments on § 135.301 compliment the FAA on the provision which would allow additional training to be given to the pilot receiving the check.

One commenter requests an explanation of the phrase in § 135.301(a) "the calendar month before or after the calendar month in which it is required." If a test or check is required to be taken in January 1979, and it is satisfactorily completed in December 1978 or February 1979, then the test or check would be considered to have been completed in the month (January 1979) in which it was required. Of course, the date of the next required test or check would be based on the January 1979 date (not on December 1978 or February 1979).

Two commenters state that the prohibition in the last sentence of § 135.301(b) concerning the use of a person unable to demonstrate satisfactory performance on a required check is unreasonably burdensome. Another commenter suggests that the rule prohibit the use of a person who has failed a check in operations under Part 135 in which the check is a requirement. If a pilot being checked under this part fails any of required maneuvers, the person giving the check may elect to give the pilot additional training during that check. Thus, it is unlikely that a person who has received the required training under Part 135 would be incapable of ultimately passing a required check under § 135.301(b). If a person is unable to pass the required check, then this is all the more reason why that person should not serve as a crewmember in operations under revised Part 135 until that person has satisfactorily completed the check. The rule provides sufficient latitude in its present form.

SUBPART H—TRAINING

§ 135.321 *Applicability and terms used. (Proposed § 135.237.)*

One commenter objects to the need for establishing and maintaining an "approved training program" and suggests that the word "approved" in § 135.321(a) be changed to "acceptable." Under § 135.341, each certificate holder must have an approved training program which includes, in as broad terms as possible, those items which are essential to every training program. The rules make clear the basic requirements for initial and recurrent training for each crewmember. Revision of an approved training program may be made at the initiative of either the certificate holder or the Administrator. The rules for revision on the Administrator's initiative are comparable to those now in Part 121. The basis for the requirement for an approved training program is that operations under Part 135 should not be exposed to the hazards that might be created by the use of a training program over which the FAA has only limited control. Thus, there is ample justification for requiring an approved training program to enhance safety in the revision of Part 135.

One commenter on the entire subpart contends that since aircraft groups I and II defined in § 135.321(b)(1) and (2) are not used elsewhere in the subpart, their application is not clear. This comment has merit and those words are deleted.

Another commenter suggests that specific training hours be specified to preclude varying interpretations of the rules for similar operations. Another commenter lauded the FAA for not establishing specific training hours. The FAA is not persuaded that specific training hours would be beneficial to either the air taxi industry or to the FAA.

One commenter suggests that § 135.321(c) be amended to provide additional categories of training such as "maneuver" or "on line" training. The present categories of training are comparable to those now in Part 121 and they are adequate.

§ 135.323 *Training program: general. (Proposed § 135.239.)*

Several commenters on § 135.323(a)(1) suggest that the word "approved" be changed to "acceptable." As discussed under § 135.321, there is ample justification for requiring the program to be subject to FAA approval.

Two commenters claim that "small on-demand air taxi certificate holders" should be exempt from Subpart H. Under § 135.341(a), certificate holders who are the only pilots in their operation are exempt from the requirement to establish and maintain an approved pilot training program. Also, the Administrator may authorize a deviation from this section if, because of the limited size and scope of the operation, safety allows a deviation. The deviation authority contained in paragraph (a) will be limited to certain aspects of the training program. It allows the Administrator to place the proper emphasis on each element of the training program needed for each certificate holder's operation. It also allows the Administrator to refine, in light of current technology, the kinds of training that must be included in a particular training program.

Another commenter suggests that credit be given in the approved training program for factory-approved ground schools or their equivalent. The rule allows the inclusion of this kind of valid training in the program presented to the FAA. It will be evaluated by the FAA and, if satisfactory will be approved.

Another commenter expresses concern that requiring the use of "properly qualified ground instructors" in § 135.323(a)(2) may preclude the use of other persons available to the operator. The rule does not limit instructor personnel to certificated ground instructors. Other properly qualified persons identified by the certificate holder and approved by the FAA may be used in the approved training program.

One commenter suggests that § 135.323(a)(4) be revised by adding the words "if applicable" where referring to the use of simulators. The rule clearly allows the use of any specific simulator available if approved by the Administrator. Another commenter opposes this paragraph but gives no rationale.

Section 135.323(c) is revised to provide that a certifying signature is not required when entries are made in a computerized recordkeeping system where a signature is not practical.

§ 135.325 *Training program and revision: initial and final approval. (Proposed § 135.241.)*

One commenter suggests limiting the applicability of § 135.325 to "Commuter Air Carriers" as defined in Part 298 of the Civil Aeronautics Board's Economic Regulations (14 CFR Part 298). This commenter also suggests exempting helicopter operations from this section because of the rapidly changing training concepts in helicopter operations. The approval process under § 135.241(a) is keyed to § 135.241(c). The certificate holder must show that the training conducted after the initial approval ensures that persons who complete the training program are adequately trained to perform their assigned duties. This is the key to the concept of training to proficiency in either airplanes or helicopters. The certificate holder has an opportunity to present for approval a training program which is as effective as the certificate holder can make it using current technology. The FAA explores each possibility to translate new technology into effective regulations and to facilitate the safest and most effective training programs possible.

Several commenters complain about the lack of standardized criteria for use by FAA Flight Standards District Offices in approving training programs. The FAA appreciates this concern and intends to ensure that standardized criteria are used for the initial and final approval of training programs and of any revisions presented for approval under this section.

Some commenters claim that this subpart would cause a paperwork burden. The enhanced training requirements will increase paperwork because of expanded curriculum standards and additional recordkeeping. After the curriculum is approved, the paperwork burden is limited to amendments to training requirements and continuing recordkeeping. Although the initial paperwork may appear significant, operational experience in administering the Part 121 training rules shows that the anticipated burden is not that heavy. After the program is approved, the improved proficiency of crewmembers yields a more efficient, sensitive and smooth-running operation. In short, once an operator has a training program, its benefits outweigh the modest burden of obtaining it.

§ 135.327 *Training program: Curriculum. (Proposed § 135.243.)*

Several commenters object to § 135.327. They contend that it is a burden on smaller operators and that a written curriculum for each type of aircraft is unnecessary and unwieldly. One commenter suggests that written curriculums should be required only for turbojets and large aircraft.

The enormous technological advances and abundance of supportive information now available to the industry can be used without causing an undue burden on any operator. Acceptable written curriculums can be developed for each type of aircraft because of the wealth of aircraft information now available. The majority of affected operators now have written curriculums. Probably, many can be modified to apply to other aircraft. Also, the training curriculum may be applied to more than one aircraft and one need not be written for each aircraft the operator uses. Of course, as complexity increases in each operation, a more complex curriculum becomes necessary. The specific requirements of § 135.327 are the minimum essential items the FAA needs to approve the curriculum

§ 135.331 *Crewmember emergency training. (Proposed § 135.247.)*

One commenter on § 135.331 suggests that it provide for exclusions based upon the certificate holder's operations and equipment, for example, operations which do not include pressurized aircraft or flotation devices. The substance of this comment is accommodated because § 135.331(a) limits emergency training to that which is applicable to each crewmember and certificate holder. Thus, if a pressurized aircraft is not operated, training for rapid decompression is not required. Similarly, if flotation devices are not required in the operation, training in the use of related equipment is not required. To emphasize this, the words "if applicable" are added at the end of § 135.331(c)(4), (6) and (7).

One commenter on § 135.331(b)(4) contends that this paragraph will be difficult to comply with but offered no explanation. Because of this comment, the review in § 135.331(b)(4) is limited to the certificate holder's previous aircraft accidents and incidents. This information should be readily accessible. Another commenter suggests that the words "and discussion" be inserted after the word "review" to ensure that the items are discussed during crewmember emergency training. Discussion should be a normal part of a review. Crewmembers may request discussion at any time and the change is not necessary.

Certain commenters contend that this rule should not apply to on-demand operators of small aircraft. This rule must apply to all certificate holders to ensure the adequacy of the training in these procedures and to afford the appropriate protection to passengers carried under Part 135.

§ 135.333 *Training requirements: Handling and carriage of hazardous materials. (Proposed § 135.249.)*

Because the requirements of paragraph (e) are covered in § 135.323(b), paragraph (e) is withdrawn.

§ 135.335 *Approval of aircraft simulators and other training devices. (Proposed § 135.251.)*

One commenter on § 135.335(b) suggests that the term "training device" could be construed to include "blackboards, visual aids" and similar items. This would necessitate the approval of these items as part of the training program. The commenter also suggests that "training device" be defined. Training devices are approved as elements of the program. A definition would be unduly restrictive. New § 135.335(c) is added to outline the elements the FAA considers in approving a training program.

§ 135.337 *Training program: Check airmen and instructor qualifications. (Proposed § 135.253.)*

One commenter claims § 135.337(a)(2) is unworkable because it does not specify who or what agency provides the initial training for required check airmen and instructors. The initial designation of check airmen or instructors is based on their documented qualifications and demonstrated ability. Then, considerable emphasis is placed on periodic evaluation of their performance by the FAA District Office. In addition, these personnel must participate in the proficiency check program of the operator. This must be appropriate to the person's airman certificate, ratings and duty assignments which are related to the approved check airman and instructor function involved. Instructors and check airmen (who are approved by the FAA to conduct flight crewmember qualification, proficiency and en route checks) approvals are terminated when their performance is no longer satisfactory. This maintains the integrity of the check airman and instructor program.

One commenter on § 135.337(a)(3) contends that the term "appropriate proficiency and competency checks" should be changed to read "appropriate instrument and flight checks." The term "appropriate proficiency and competency checks" is more consistent with current industry standards than the term suggested by the commenter. Also, it is consistent with the language of §§ 135.293 and 135.297.

Several commenters on § 135.337 contend that § 135.337(a)(5) exceeds the requirements of current § 121.411(a)(6) which allows a check airman to hold a Class III medical certificate. The commenters assert that this precludes the use of experienced senior pilots who can no longer meet Class I or II medical standards. They claim that the traveling public's safety is not dependent on the class of medical certificate held by a check airman.

The objections presented do not make a persuasive case for amending or withdrawing this rule. The commenters, in comparing proposed § 135.337 with § 121.411, may have failed to consider certain requirements of Part 135 which were not proposed to be changed. Current § 135.135 requires each certificate holder who desires FAA approval of a check pilot to submit a request in writing to the appropriate FAA District Office. The Administrator may issue a letter of authority to a person as a check pilot if that person meets the requirements of §§ 61.3, 61.31, 61.139, 61.149 and 61.151 and meets and accomplishes certain other requirements essential to that person's approval. Thus, current Part 135 requires a check airman to hold at least a commercial pilot certificate with appropriate category and class ratings, an instrument rating, an appropriate type rating (if required) and at least a Class II medical certificate. Under § 135.337, the check airman must hold the certificate and ratings required of a pilot in command in an operation conducted under § 135.243. Consequently, the check airman must hold the Class I or Class II medical certificate appropriate to the certificate privileges under § 135.243.

Safety would not be compromised if pilots who are used as check airmen in an aircraft simulator only hold a Class III medical certificate. Of course, the pilot must meet the other requirements of this chapter. New § 135.337(a)(7) is added to allow that. This provides greater operational flexibility for certificate holders and airmen. Section 135.337(b)(2) is clarified by inserting the words "the following as evidenced by the approval of" in place of the word "for."

§ 135.339 *Check airmen and flight instructors: initial and transition training. (Proposed § 135.255.)*

One commenter contends § 135.339(a) should be deleted because § 135.337 does not specify who is authorized to give the initial training for the check airmen and instructors. This comment is discussed at length under § 135.337.

Commenters on § 135.339(c)(3) criticize the requirement because they interpret it to be a mandate to accomplish this training in flight. The language of § 135.339(c) is clear that demonstration of unsafe practices in flight is not required. The paragraph closely follows the language of current § 121.413. This paragraph is intended to ensure that the training program includes a discussion or an appropriate demonstration of the need for timely action in response to an in-flight situation having critical accident potential. Sufficient safeguards should be employed when simulating emergency procedures.

§ 135.341 *Pilot and flight attendant crewmember training programs. (Proposed § 135.257.)*

Commenters on § 135.341 suggest that all certificate holders be required to have a training program. One commenter claims that a training program patterned on current Part 121 is unduly burdensome. Another commenter suggests that the word "approved" in § 135.341(a) be changed to "acceptable".

One of the purposes of this revision of Part 135 is to update and improve the training requirements. Changes include provisions for approving and revising training programs, for extending the use of aircraft simulators, and for allowing improvements in present technology to be easily applied in training programs. These changes increase the quality of crewmember training without unduly burdening any operator. The suggestion to change the word "approved" to "acceptable" is discussed at length under § 135.321(a).

One commenter contends that compliance with Subpart H will unnecessarily increase the cost of conducting air taxi operations in small aircraft with little increase in the level of safety. This comment overlooks the deviation authority in § 135.341(a). That section allows waivers of certain training requirements based on the size and scope of operations when the operator shows that literal compliance with the rules is not necessary in the interest of safety. This provides adequate flexibility to significantly reduce the cost of training for operators of small or light aircraft.

Another commenter suggests that every air taxi operator, regardless of size, be required to have an air taxi training program. This commenter contends that if an operator is not otherwise required to have an approved training program, then it should be required to contract with a company with an approved program to train that operator's personnel. The current rule does not require a training program if the certificate holder is the only pilot. No change in the current rule is justified. However, § 135.341(a) is editorially revised to clarify that language. Also the phrase "every 12 calendar months" is deleted from § 135.341(b)(5) because it is not appropriate there.

§ 135.343 *Crewmember initial and recurrent training requirements. (Proposed § 135.259.)*

The concluding sentence of current § 135.137, was inadvertently omitted from this rule as proposed in Notice 77-17. To make § 135.257 and § 135.343 consistent, the sentence is restored.

§ 135.345 *Pilots: Initial, transition, and upgrade ground training. (Proposed § 135.261.)*

An Aircraft Flight Manual is not required in the certification of all aircraft. For example, one is not required for an airplane of 6,000 pounds or less maximum certificated takeoff weight type certificated under Part 23. Sections 23.1581(a)(2) and 27.1581(a)(2) requires that if the required information is not furnished in an Aircraft Flight Manual, then it must be furnished in any combination of approved manual material, markings, and placards. To reflect this fact, the words, "or equivalent" are added after the words "Aircraft Flight Manual" in § 135.345(a)(2)(xi).

§ 135.347 *Pilots: Initial, transition, upgrade, and differences flight training. (Proposed § 135.263.)*

One commenter on § 135.347 contends that it prohibits a certificate holder whose approved training program authorizes the use of an aircraft simulator, from reverting to an aircraft when the simulator is out of service. A reasonable and prudent element of an approved training program would authorize the use of an aircraft when the simulator is out of service.

One commenter suggests that the words "airplane simulator" in § 135.347(b) should be changed to the words "aircraft simulator." The FAA agrees and that is done. The phrase "or a static aircraft" in § 135.347(b) no longer serves any useful purpose and it is deleted.

§ 135.349 *Flight attendants: Initial and transition ground training. (Proposed § 135.265.)*

Section 135.349(b) is deleted because it is covered in § 135.295.

§ 135.351 *Recurrent training. (Proposed § 135.267.)*

Section 135.351(b)(3) is deleted because it is covered in § 135.295.

SUBPART I—AIRPLANE PERFORMANCE OPERATING LIMITATIONS

§ 135.361 *Applicability. (Proposed § 135.271.)*

One commenter agrees with this subpart, but goes on to state an understanding that the FAA does not intend to apply additional airplane performance standards beyond those now in the Federal Aviation Regulations. This subpart is needed to ensure that these airplanes are operated within limits that meet the level of safety intended for Part 135 flight operations. Their adoption does not imply that additional airplane performance standards may not be necessary in the future. These rules for airplane performance are adequate for the present generation of airplanes. However, future amendments to the current regulations may be necessary because of unforeseen circumstances.

One commenter states, without elaborating, that, "This subpart should not apply to on-demand air taxis due to the fact that there is insufficient data readily available as published by the Federal Government." Subpart I applies to the type of aircraft being operated and not the type of operation. In the interest of safety, each aircraft must meet these operating limitations, whether used in air taxi or commuter service. The requirements adopted in Subpart I are in the current rules and they have not caused operators any problems.

Several commenters suggest that the FAA should make available the airport data necessary to comply with this subpart. The FAA cannot assume responsibility for the collection and publication of the information for all airports that is necessary to show compliance with this subpart. The certificate holder is responsible for obtaining the required data for each airport into which its operations are conducted. The basic data on specific airports should be requested from the airport authority which normally has that available.

Several commenters state that the "60-percent rule" should apply to all operators and an exception should allow operators with auxiliary stopping devices (such as drag chutes and propeller or thrust reversers) to use a 70-percent factor. The applicability of this subpart is consistent with current regulations governing airplane performance operating limitations. Allowing the use of a 70-percent factor for additional auxiliary stopping devices is not acceptable under this subpart. No valid data is available for these devices and extensive testing would be necessary before that data would be available. Performance data now available in the Airplane Flight Manual has proven adequate to comply with this subpart.

Four commenters suggest that Subpart I apply to turbojet aircraft and large aircraft. This subpart applies to all large aircraft, including turbojet, operated under revised Part 135. Section 135.155 in Notice 77-17, which contained small airplane performance operating limitations, has been included in Subpart I as §§ 135.397 and 135.399. Small airplane performance operating limitations do not currently apply to nontransport category turbojet airplanes and this rule was not proposed for change. However, Notice 77-25 (42 FR 56702; Oct. 27, 1977) invited recommendations concerning the development of a new airworthiness certification standard for the airplanes intended for use by commuter air carriers in Part 135 operations. These comments are being evaluated separately.

When published, Notice 77-17 did not contain Amendment 121-132 (41 FR 55475; Dec. 20, 1976) governing airplane performance. This amendment moved the definition of "effective length of runway" for takeoff from § 121.171(b) to § 121.199(b)(5), because this term is not used elsewhere in Part 121. Having the definition in § 121.171 caused confusion in the past. Sections 135.361(b) and 135.389(b) are amended in a manner similar to Amendment 121-132.

§ 135.363 *General. (Proposed § 135.273.)*

Section 135.363 is clarified by defining a large nontransport category airplane for the purposes of Subpart I as one that was type certificated before July 1, 1942. A large airplane type certificated after that date must meet performance operating limitations for a transport category airplane to operate under Part 135.

§ 135.379 *Large transport category airplanes: turbine engine powered; takeoff limitations. (Proposed § 135.289.)*

Section 135.379(c) is clarified by inserting the words "as defined in § 25.109 of this chapter" after the word "distance." This is done because the definition of "accelerate-stop distance" has been removed from Part 1 and now is defined in Part 25.

§ 135.397 *Small transport category airplane performance operating limitations. (Proposed § 135.155.)*

Proposed § 135.155(a) and (b) are moved from Subpart C and redesignated as § 135.397 because they contain small transport category airplane performance operating limitations.

§ 135.399 *Small nontransport category airplane performance operating limitations. (Proposed § 135.155.)*

Proposed § 135.155(c) is moved from Subpart C and redesignated as § 135.399 because it contains small nontransport category airplane performance operating limitations.

An Airplane Flight Manual is not required for airplanes of 6,000 pounds or less maximum certificated takeoff weight which are type certificated under Part 23 of this chapter. Section 23.1581(a)(2) requires that if the information is not furnished in an Airplane Flight Manual, then it must be furnished in any combination of approved manual material, markings and placards. Thus, the words, "or equivalent" are added after "Airplane Flight Manual" in § 135.399. The applicability of this rule to small airplanes is unchanged from current § 135.148.

Some commenters on proposed § 135.155 believe it should apply to all multiengine turbine engine-powered airplanes. Others state that the proposal granted an unfair advantage to operators of those airplanes not affected by it. Where performance information is available in an Airplane Flight Manual, safety considerations require that the information be used with the other requirements in this subpart. The performance information required for the compliance with this section may not always be available for nontransport category airplanes.

SUBPART J—MAINTENANCE, PREVENTIVE MAINTENANCE, AND ALTERATIONS

§ 135.411 *Applicability. (Proposed § 135.333.)*

Several commenters contend that § 135.411(a)(1) imposes manual and recordkeeping requirements in addition to those now required in other parts of the Federal Aviation Regulations. Operators who must comply with § 135.411(a)(1) now must meet the maintenance and recordkeeping requirements of Parts 91 and 43. Section 135.411(a)(1) does not add maintenance recordkeeping or manual requirements beyond those now required under Parts 43, 91 and 135 for an operator using an aircraft type certificated, excluding any pilot seat, for nine or less passenger seats.

Two commenters state that a maintenance rule applied to one type of Part 135 operator should be imposed on all of them. The different types and classes of aircraft now used in Part 135 operations were considered in developing revised Part 135. Subpart J provides an acceptable maintenance system considering those different types and classes of aircraft.

One commenter recommends that the passenger seating criteria for helicopters in § 135.411(a)(1) be increased from 9 to 19 and in § 135.411(a)(2) increased from 10 to 20. All types of aircraft, including helicopters, were considered during the development of Subpart J. A helicopter is no less complex than an airplane. A helicopter is used to carry passengers in similar operating environments to an airplane. This includes approval of helicopters for use in IFR conditions. If the same maintenance standards were not imposed on helicopters and airplanes, the public interest would not be served. Passengers must have the same assurance of safety whether an air taxi operator conducts operations in airplanes or helicopters.

Some commenters suggest that § 135.411(a)(1) should apply to piston-powered aircraft and § 135.411(a)(2) should apply to turbine-powered aircraft. Basing the maintenance requirements on the type of powerplant installed is not acceptable and may compromise safety. For example, if § 135.411(a)(1) were applied only to piston-powered aircraft, an aircraft that carries 30 passengers would have lower maintenance requirements than a small turbine-powered aircraft that carries six passengers. Thus, the rule for maintenance and inspection of Part 135 aircraft applies on the basis of the passenger-carrying capability rather than the type of powerplant installed.

Some commenters state that § 135.411 will burden operators in remote areas due to the shortage of personnel available to perform the required inspections. Some operators using aircraft that are type certificated for 10 or more seats, excluding any pilot seat, may experience difficulty in accomplishing required inspections. However, § 135.411(a)(2) should apply wherever the aircraft are operated to achieve the level of safety required for revised Part 135. Section 135.411(a)(1), which applies to aircraft type certificated for nine or less passenger seats, excluding any pilot seat, will not burden air taxi operators in remote areas. The procedures for the performance of maintenance remains basically the same as the current rules, except for additional maintenance requirements in § 135.421 for engine, propeller, rotor and emergency equipment.

A number of commenters state that the lack of the maintenance program required by §§ 135.11 and 135.411(a)(2) has not caused many fatal accidents. A study of air taxi accidents made by the National Transportation Safety Board (NTSB-AAS 72-9) indicates that the lack of properly managed maintenance programs is a contributing factor in air taxi accidents. The Board concludes that there is a lack of clearly identifiable safety practices in the maintenance functions of commuter air carriers. The Board recommends Part 135 require training for aircraft maintenance personnel and establish standard programs for using manufacturer maintenance requirements for aircraft components, powerplants and propellers. The Board's recommendation was considered in revising Part 135.

Two commenters question whether a continuous maintenance program is justified in view of the cost. Subpart J is justified by the diversity of aircraft that certificate holders operate. This subpart provides the air taxi passenger with a level of airworthiness that is equivalent to a Part 121 air carrier.

Some commenters want to know whether "certificated pertained to the configured capacity of an aircraft or the passenger capacity as listed on the aircraft type data sheet when an aircraft is type certificated." Under Subpart J, "certificated" means the number of passengers listed on the type data sheet or as modified by a Supplemental Type Certificate (STC). To clarify that, the word "type" is added before the word "certificated" in §§ 135.411(a)(1) and (2).

§ 135.413 *Responsibility for airworthiness. (Proposed § 135.335.)*

Several commenters on § 135.413(a) state that there is no need to refer to having defects repaired between required maintenance under Part 43 because Part 135 requires a maintenance program. Although Part 135 includes maintenance programs for air taxi aircraft, the performance standards for maintenance, preventive maintenance, rebuilding and alteration are prescribed in Part 43. Thus, the reference is appropriate.

Section 135.413(a) applies to all Part 135 certificate holders. This rule places the primary responsibility for airworthiness of its aircraft on the certificate holder. Each certificate holder must ensure that all required maintenance is performed regardless of the program § 135.411 requires. The operator of an aircraft that is type certificated for nine seats or less, excluding any pilot seat, may have a properly certificated person maintain its aircraft. The person who performs this work for a certificate holder (who must comply with § 135.411(a)(1)) must perform that work as the applicable Federal Aviation Regulations require. Section 135.413(b) places on the operators of aircraft type certificated for 10 seats or more, excluding any pilot seat, the responsibility to perform the maintenance on their aircraft as required by the Federal Aviation Regulations. Section 135.413(b)(2) allows these operators to have their maintenance performed by another person but it does not relieve the certificate holder of the responsibility for that work.

Several commenters state that § 135.413(b)(2) is unrealistic because it makes air taxi operators who maintain their aircraft under § 135.411(a)(2) responsible for the maintenance someone else performs on its aircraft. They also state that an FAA-certificated repair station is found by the FAA to be qualified and it would be a duplication to have the operator assume this responsibility. An FAA-certificated repair station is qualified under the requirements of Part 145. However, the operator must ensure that each person who performs its maintenance is competent, has adequate facilities and has an organization to perform maintenance in accordance with the certificate holder's manual. The operator can consider the fact that the FAA has found that a repair station is technically qualified to perform its maintenance. The operator still is responsible for ensuring that a repair station can, and in fact does, comply with the procedures outlined in the operator's manual.

Another commenter objects to the certificate holder being responsible for work an FAA-certificated repair station performs because this requires a periodic visit to each agency with whom the operator contracts for maintenance. The certificate holder must determine the repair station's capability and then monitor its performance. In effect, a repair station under contract is an extension of the certificate holder's organization and maintenance facility. The certificate holder is expected to make the same inquiries concerning the repair station's capability and performance that it does for its own facility. Since 1956, this system has been shown to be effective by large and small operators who maintain their aircraft under Part 121.

Section 135.413(b) is revised from the proposal in Notice 77-17 to make it clearer. Section 135.413(b)(2) (proposed as paragraph (c)) is reworded to clarify the responsibilities of a certificate holder who maintains its aircraft.

§ 135.415 *Mechanical reliability reports. (Proposed § 135.337.)*

One commenter recommends that the reporting period should be extended to 72 hours because the certificate holder's employees work irregular hours. This comment has merit and § 135.415(d) is changed.

Several commenters indicate that no significant data is obtained by requiring mechanical reliability reports (MRR) for single-engine airplanes and helicopters. Another commenter states requiring MRR for single-engine aircraft will not provide significant data because these aircraft are not complex. An MRR indicates a safety-of-flight item regardless of the type or size of aircraft. Many single-engine aircraft are not complex but the complexity of the environment in which they operate (including instrument flight conditions) is increasing. Also, single-engine aircraft form the major part of the Part 135 fleet. The additional data received on these aircraft will significantly enhance safety because that data is used to determine safety trends in aircraft and aircraft systems.

One commenter states that helicopters certificated for a passenger seating configuration of 19 seats or less should be excluded from the MRR requirements. Helicopters are a growing segment of the Part 135 fleet and they operate in the same environment that airplanes do. The data received on helicopters will provide the same safety information for helicopters that the current system does for airplanes.

The phrase "because of flame out" was inadvertently omitted from the proposed rule and is added to § 135.415(a)(6).

§ 135.417 *Mechanical interruption summary report. (Proposed § 135.339.)*

One commenter indicates that a monthly reporting requirement is an undue burden on the operator of single-engine aircraft due to the lack of complexity. The lack of complexity of single-engine aircraft alone is not sufficient reason to exclude them from a mechanical interruption summary reporting requirement. However, insufficient additional safety data would be acquired to justify that report for single-engine aircraft. Adequate safety data about them will be submitted under § 135.415. Section 135.417 is changed to exclude these aircraft.

Another commenter recommends that § 135.417 be revised to include only "Commuter Air Carriers, as defined in Part 298 of this title, operating airplanes that are certificated for a seating configuration, excluding any pilot seat, of 10 seats or more, or operating helicopters that are certificated for a passenger seating configuration of 20 seats or more." As discussed under § 135.411, the public interest would not be served by distinguishing helicopters from airplanes on the basis of the number of seats under this rule.

§ 135.421 *Additional maintenance requirements. (Proposed § 135.343.)*

Several commenters state that the term "manufacturer's recommended maintenance programs" could require compliance with all service letters suggesting installation of kits which may not be available. Section 135.421 requires compliance with the manufacturer's maintenance and inspection instructions in the maintenance manual that is required under the airworthiness standards that apply to the aircraft, aircraft engine, propeller, rotor or item of emergency equipment. The manual that must be made available to the owner under § 23.1529 of this chapter would satisfy this requirement. The maintenance instructions that are required by §§ 33.3 or 35.5 also would satisfy § 135.421 for the propeller or aircraft engine. Service letters or bulletins that are not required by an Airworthiness Directive are not included unless they are part of the maintenance manual or maintenance instructions required under the rules. A new § 135.421(b) is added to make this clear.

One commenter states that it has been operating engines for many years. It has a maintenance program that is reliable and that provides for engine inspection and overhaul times that are in excess of those required by the engine manufacturer. The purpose of § 135.421 is to give the certificate holder the opportunity to develop just this kind of program based upon its operating experience.

Several commenters suggest that § 135.421 apply only to nonturbine-powered aircraft. As discussed in detail under § 135.411, § 135.421 applies based on the type certificated passenger seating capacity of the aircraft, not its powerplant.

§ 135.423 *Maintenance, preventive maintenance, and alteration organization. (Proposed § 135.345.)*

Commenters claim that § 135.423 imposes an undue burden on small operators. They also state that separating the inspection function from the maintenance function is the major problem. Section 135.423 applies to certificate holders that use aircraft type certificated for 10 seats or more, excluding any pilot seat. A certificate holder who operates this size aircraft must see to it that the maintenance is performed by an adequate maintenance organization whether the work is done at the certificate holder's facilities or at another person's facility. This requirement is similar to one currently in Part 121. Separation of required inspections from maintenance functions is necessary to ensure that work on required inspection items is properly performed. Considering the modern air taxi industry of today, this requirement is necessary.

This rule does not limit each person who is authorized to inspect to doing only inspections. They may perform maintenance in other areas. This section provides that the person who conducts the required inspection of an item may not be the person who performs the work on that item. Also, these items are a relatively small percentage of an operator's overall maintenance program.

One commenter recommends that all words relating to "other maintenance and preventive maintenance" in § 135.423(c) be deleted because that requires reinspection of items to be completed away from home base. The required inspection items should be properly done wherever the item is maintained.

One commenter asked for clarification of the term "adequate" in § 135.423(a). "Adequate" means that the operator has a program that complies with § 135.425. The certificate holder must ensure that maintenance, preventive maintenance and alterations are performed in accordance with its manual, that the work is done by competent personnel, that proper facilities and equipment are provided and that the aircraft is airworthy when released to service. The same commenter asked where qualified personnel could be obtained since there now is a shortage of qualified mechanics in the industry. The rule should, in fact, relieve this problem. An operator who must comply with § 135.411(a)(2) may use its employees who are not certificated mechanics, but who are qualified to be certificated as repairman under § 65.101 when recommended by the certificate holder.

One commenter recommends that each reference to a person other than a certificate holder be deleted from §§ 135.423(a) and (b) because they have probably already been approved by the Administrator. If not, the commenter states the certificate holder should assume responsibility and sign the airworthiness release. The commenter suggests §§ 135.423(a) and (b) be changed to state "that each certificate holder must have an adequate organization to perform the work," including "required inspection items." This change would require each operator to have a maintenance organization. An operator could not use another person with an adequate organization to perform maintenance, preventive maintenance and alteration and required inspections in accordance with the operator's manual.

The same commenter suggests that the second sentence of § 135.423(c) be deleted because the first sentence adequately covers the desired separation between inspection and maintenance functions. The first sentence requires that inspections be separated from other maintenance, preventive maintenance and alteration functions. The second sentence identifies the level in a certificate holder's organization where required inspection functions must be separate from the maintenance, preventive maintenance and alteration functions.

§ 135.425 *Maintenance, preventive maintenance, and alteration programs. (Proposed § 135.347.)*

One commenter on § 135.425 states it should only apply to helicopters that are certificated for a passenger seating configuration, excluding any pilot seat, of 19 or less. As discussed under § 135.411, the public interest would not be served by doing this. The same commenter states that operators of helicopters in remote areas cannot comply with § 135.425. A similar comment is discussed at length under § 135.411.

One commenter states that operators with small aircraft that carry nine passengers or less should be exempt from § 135.425. Section 135.411(a)(2) explicitly provides that.

One commenter states that maintenance performed under FAA-approved procedure is adequate and § 135.425 is not necessary. In September 1972, the National Transportation Safety Board released a report (NTSB-AAS 72-9) following an air taxi safety study of accidents in air taxi and commuter operations. The Board found the lack of properly managed maintenance programs was a contributing factor in air taxi accidents. The Board's recommendation was considered in the development of this rule.

§ 135.427 *Manual requirements. (Proposed § 135.349.)*

Several commenters object to § 135.427(a) requiring the operator to list in the manual "persons with whom it has arranged for the performance of its required inspections, other maintenance, preventive maintenance, or alterations, including a general description of that work." The commenter claims that this is too restrictive and eliminates the ability to obtain quality work without undue delay. Section 135.427 does not prevent an operator from having maintenance performed by persons who are not listed in the manual. That would be impractical. The rule is flexible enough to allow maintenance to be performed on an "on call" basis. The operator is responsible for the airworthiness of its aircraft whoever performs the maintenance. Section 135.21(h) requires procedures for a pilot to obtain maintenance at a place where previous arrangements have not been made by the operator. This is in the current rules and has not been an undue burden. The rule is necessary to inform the certificate holder's personnel of those persons who may perform maintenance on its aircraft.

One commenter states that § 135.427 should only apply to operators that carry 20 or more passengers. As discussed under § 135.411, the public interest would not be served by doing this.

One commenter agrees with § 135.427 but expresses concern that there is no definite guidance supplied by FAA to develop a standard manual. The FAA will develop an Advisory Circular to provide operators with information to assist in developing acceptable programs and manuals.

A new § 135.427(c) is added that requires an operator to establish a system in its manual for the retention of certain maintenance records. This parallels § 121.369(c) and is referenced in § 135.439. Without § 135.427(c), a certificate holder could not use modern methods of collecting, recording or storing maintenance records. Several § 135.2 operators now use coded systems to perform, control and record their maintenance programs under § 121.369(c). Operators also use various maintenance control programs and techniques that are available in coded form. This change does not impose any additional recordkeeping requirements. A certificate holder now must comply with § 91.173(a)(1) which requires a record of the work performed. Without § 135.427(c), Part 135 operators who are using coded systems under § 121.369(c) would have to revert to an uncoded recordkeeping system. This is because § 91.173 requires signatures and a written description of work accomplished on aircraft for all owners except those exempted by § 91.161(b).

§ 135.429 *Required inspection personnel. (Proposed § 135.351.)*

Several commenters oppose the separation of the required inspection items under § 135.429(c) from maintenance functions because it would impose hardships on the small operators or the small shop. This issue is discussed at length under § 135.423.

One commenter states that separating required inspections will require an operator to send an inspector to various places for tire changes or other unexpected maintenance. This may happen, but occurrences can be minimized by selective classification of required inspection items based on the operator's experience. Many maintenance tasks that are essential to a reliable and safe aircraft are not necessarily so critical that they should be required inspection items. Enough flexibility is provided under § 135.429(c) to enable an operator to manage a program that provides both safe and economic operations.

§ 135.431 *Continuing analysis and surveillance. (Proposed § 135.353.)*

Commenters on § 135.431 state that the rule should not apply to small operators, The applicability of the maintenance and inspection rules should not be based on the size of the certificate holder. They must be based on the type certificated seating capacity of the aircraft being used because that most appropriately reflects the size and complexity of the aircraft.

One commenter suggests combining §§ 135.431(a) and (b) and deleting § 135.431(c). This would eliminate a certificate holder's privilege to petition the FAA to reconsider a notice of change of a program and should not be deleted.

§ 135.433 *Maintenance and preventive maintenance training program. (Proposed § 135.355.)*

The commenter on § 135.433 agrees with the concept of this rule but suggests that the statement "or a person performing maintenance * * * for it" in § 135.433 be deleted. The commenter states that it is impossible to ensure that vendors or other organizations have adequate training programs. Adopting this suggestion would require each certificate holder to have a training program for each vendor or person who performs maintenance on its aircraft. Reviewing the qualifications and training of a person who performs maintenance for an operator is a more workable, less burdensome alternative.

§ 135.435 *Certificate requirements. (Proposed § 135.357.)*

Commenters object to § 135.435 because they assume that the words "appropriate airman certificate" in § 135.435(a) eliminate the certificate holder's prerogative to determine the qualifications of its management personnel, of persons who are directly in charge of maintenance, or of persons who perform inspection of required inspection items. This section only establishes the basic qualification that these people must hold an appropriate airman certificate. This ensures that the person who performs these functions has basic knowledge of the regulations governing the performance of the maintenance, preventive maintenance or alterations.

§ 135.437 *Authority to perform and approve maintenance, preventive maintenance, and alterations. (Proposed § 135.359.)*

To allow a certificate holder to perform its own maintenance, preventive maintenance, and alterations, the words "perform or" are added to § 135.437(a) after the words "certificate holder."

§ 135.439 *Maintenance recording requirements. (Proposed § 135.361.)*

The commenters on § 135.439(a)(2)(i) object to the word "propeller." One suggests that the word "propeller" be deleted because the propeller consists of blades and hub and does not have a single time. The other commenter suggests that the word "propeller" be changed to read "propeller hub" because it is impossible to keep records on the blades. The definition of "propeller" in Part 1 includes the hub and blades. Therefore, each propeller blade and hub is identified by model designation, part number, and serial number. Section 135.439(a)(2)(i) requires the total time in service for the blades, hub or other control component normally supplied by the manufacturer.

The commenters on §§ 135.439 and 135.439(a)(2)(iii) indicate that they consider the rule a duplication of recordkeeping requirements of Part 91. The recordkeeping required under §§ 135.439 and 135.439(a)(2)(iii) is in place of the records required under § 91.173(a)(2)(i).

The word "rotor" is added to § 135.439(a)(2)(i) to require a record of the total time in service for a rotor. This is necessary because specific problems are being encountered with rotors and a number of airworthiness directives (AD) are being issued about rotors.

The words "date and" are added to § 135.439(a)(2)(v) to ensure that each AD is complied with by the date that it is due. The phrase "and, if the airworthiness directive involves recurring action, the time and date when the next action is required" also is added to § 135.439(a)(2)(v). A certificate holder is required to record the time and dates of recurring ADs because § 135.443 requires a certificate holder to maintain the current status of ADs. For an AD requiring recurring action, the time and date of the next required action is part of the current status. These changes clarify the rule.

The words "and repairs" are added to § 135.439(a)(2)(vi) because a repair is maintenance and repairs must be recorded to determine the airworthiness status of the aircraft.

§ 135.443 *Airworthiness release or aircraft log entry. (Proposed § 135.365.)*

Several commenters favor § 135.443 but object because making the statement outlined in § 135.443(b) each time a person performs maintenance on an aircraft is time consuming. One commenter suggests § 135.443 be amended to include the concept outlined in § 121.709(d). The procedures are included in § 135.443(c) as suggested.

One commenter suggests that the words "aircraft log entry" in § 135.443(b) (3) be changed to "aircraft maintenance records." The commenter states this requires an additional log because different times are used for the same documents in § 135.65. The aircraft log entry in § 135.443 is not an additional requirement. The log mentioned in § 135.65 may be the same log and may be part of the operator's system for maintenance recordkeeping. The log entry mentioned in § 135.443(b) (3) becomes a part of the aircraft records under § 135.439 and is not intended to duplicate other records. Section 135.439(a)(2) specifically requires the airworthiness release and the aircraft log entry to be made a part of the aircraft records.

DRAFTING INFORMATION

The principle authors of this document are B. L. Abram, L. D. Basham, D. W. Kress, F. E. Kurdys, D. A. Schroeder, W. J. Sullivan, T. G. Walenta, and L. J. Weston, Flight Standards Service, and R. C. Beitel and M. S. Filler, Office of the Chief Counsel.

ADOPTION OF THE AMENDMENTS

Accordingly, Parts 121, 127, and 135 of the Federal Aviation Regulations (14 CFR Parts 121, 127, and 135) and Special Federal Aviation Regulations 23, 30, and 33 are amended, effective December 1, 1978.

(Secs. 313(a), 314(a), 601 through 610, and 11022 of the Federal Aviation Act of 1958 (49 U.S.C. 1354(a), 1355(a), 1421 through 1430, and 1502); Sec. 6(c), Department of Transportation Act (49 U.S.C. 1655(c)).)

Amendment 135-1

Miscellaneous Amendments

Adopted: April 27, 1979 **Effective: May 7, 1979**

(Published in 44 FR 26737, May 7, 1979)

SUMMARY: These amendments accomplish clarifications and correct certain minor omissions and typographical errors noted in Regulatory Review Program Amendment Nos. 121-147 and Revision of Part 135. These amendments are necessary to express correctly the FAA's intended statement of the rules. In addition, the compliance date is extended for the instrument rating requirement applicable to pilots in command of aircraft under visual flight rules.

FOR FURTHER INFORMATION CONTACT: Mr. Raymond E. Ramakis, Regulatory Projects Branch, Safety Regulations Division, Flight Standards Service, Federal Aviation Administration, 800 Independence Avenue, S.W., Washington, D.C. 20591; telephone (202) 755-8716.

SUPPLEMENTARY INFORMATION:

In September 1978 Amendment Nos. 121-147, 127-35, and Revision of Part 135 were issued under the Regulatory Review Program. A review of those amendments shows that there were minor errors and omissions and that clarifying changes are needed in some sections of Parts 121 and 135. Also, it has been determined that it is necessary to extend the compliance date of one requirement. The reasons for each of the amendments are explained below:

1. § 121.9. There was a typographical error in this section. The phrase "E through K" should read "E through V" as proposed in Notice No. 77-17.

2. § 135.10. The FAA has received numerous petitions requesting exemptions from the instrument rating requirement prescribed in § 135.243(b)(3). As a result, the FAA has determined that additional rule making regarding that requirement should be initiated before compliance with the requirement becomes mandatory. Accordingly, this amendment extends the compliance date for the instrument rating requirement until December 1, 1980. After this amendment becomes effective, the FAA will issue a notice of proposed rule making and propose appropriate changes to the rule requiring and instrument rating in § 135.243(b)(3).

3. § 135.67. It has been determined that the Air Traffic Service has procedures for collecting and disseminating information regarding potentially hazardous meteorological conditions and irregularities in communications or navigational facilities. Therefore, it is not necessary to require the pilot to request that this information be disseminated and the words "and request that the information be disseminated" are deleted. This will relieve pilots of an unnecessary burden.

4. § 135.149. In § 135.149(d) the reference to "§ 21.205" was a typographical error. It should read "§ 21.305".

5. § 135.245. Section 135.243(b)(4) allows a pilot in command of a helicopter to operate visual flight rules (VFR) below a ceiling without holding an instrument rating. Section 135.245 requires all second-in- command pilots to hold an instrument rating. This requirement is greater than that for pilots in command. To correct this unintended and anomalous result, § 135.245 has been revised by adding an amended first paragraph designated (a) and by adding a new paragraph (b) to allow second-in-command helicopter pilots to fly other than over-the-top without requiring an instrument rating.

6. Section 135.335. This section has been revised to clarify which subsections apply to both simulators and training devices and which apply to only simulators. Additionally, § 135.335(c) has been redesignated paragraph (d) and a new paragraph (c) has been added to make it clear that an appropriate simulator or other training device may be used by more than one certificate holder.

It should be noted that in the explanation of § 135.227, the reference in the second sentence of the second paragraph to "§ 135.229" was a typographical error. It should have read "§ 135.227".

Since these amendments extend a compliance date and are clarifying an editorial in nature and implement changes required to carry out the intent of amendments under revised Part 135, or are relaxatory, and impose no additional burden on any person, I find that notice and public procedure are unnecessary and that good cause exists for making them effective in less than 30 days. However, the FAA invites interested persons to submit such written data, views, or arguments as they may desire regarding these amendments. Communications should identify the docket number and be submitted in duplicate to the Federal Aviation Administration, Office of the Chief Counsel, Attention: Rules Docket, AGC-24, 800 Independence Avenue, S.W., Washington, D.C. 20591. All communications received on or before July 9, 1979, will be considered by the Administrator and these amendments may be changed in the light of the comments received. All comments submitted will be available, both before and after the closing date for comments, in the Rules Docket for examination by interested persons.

THE AMENDMENTS

Accordingly, Parts 121 and 135 of the Federal Aviation Regulations are amended, effective May 7, 1979.

(Secs. 313(a), 314(a), 601 through 610, and 1102 of the Federal Aviation Act of 1958 (49 U.S.C. 1354(a), 1355(a), 1421 through 1430, and 1502); Sec. 6(c), Department of Transportation Act (49 U.S.C. 1655(c)).)

The Federal Aviation Administration has determined that this document involves a regulation which is not significant under Executive Order 12044, as implemented by DOT in Department of Transportation Regulatory Policies and Procedures (44 FR 11034; February 26, 1979). In addition, since these amendments extend a compliance date and are editorial and clarifying in nature, or are relaxatory, and impose no additional burden on any person, the Federal Aviation Administration has determined that the anticipated impact is so minimal that an evaluation is not required.

Amendment 135-2

Airworthiness Standards: Reciprocating and Turbopropeller-Powered Small Multiengine Airplanes—Increase in Approved Takeoff Weights and Passenger Seating Capacities

Adopted: September 7, 1979 Effective: October 17, 1979

(Published in 44 FR 53723, September 17, 1979)

SUMMARY: This amendment adopts a new Special Federal Aviation Regulation (SFAR) which prescribes additional airworthiness standards applicable to existing propeller driven multiengine small airplanes to allow their type and airworthiness recertification at weights in excess of the limitation of 12,500 pounds maximum certificated takeoff weight, or with an increase in the number of passenger seats, or both. The rules applicable to air taxi and commercial operators (Part 135) are amended to allow the operation of airplanes certificated under the SFAR. In addition, the operating rules (Parts 91 and 135) are amended to require that airplanes certificated under the SFAR at weights in excess of 12,500 pounds meet updated interior material flammability requirements within one year of initial airworthines certification. These amendments are intended to allow the design capabilities of certain existing small airplanes to be more fully utilized. They are also designed to increase aircraft availability for the commuter market that is burgeoning since enactment of the Airline Deregulation Act of 1978.

FOR FUTHER INFORMATION CONTACT:

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BACKGROUND

In general, under the Federal Aviation Regulations (FARs) relating to certification, airplanes are treated, as they hve been for many years, as either small or large. Numerous pilot, operating, and maintenance requirements of the FARs utilize the same small and large distinction. In addition, the International Civil Aviation Organization (ICAO) uses this weight distinction. The distinction is based on the maximum certificated takeoff weight (MCTW) of the airplane. For airplanes with an MCTW of 12,500 pounds or less, the airplane is defined in § 1.1 of the FARs as small. Airplanes with an MCTW of more than 12,500 pounds are defined as large.

The 12,500 pound weight distinction, adopted in 1953, was based in part upon certain airplane and powerplant design considerations which were then considered significant. Over the past 26 years, however, numerous additional operational factors have developed and must be considered in airplane design. In fact manufacturers have asserted that the 12,500 pound weight distinction no longer provides an appopriate demarcation between small and large airplanes.

A number of recent requests for exemption or for rule change concerning this weight distinction have been made by operators who utilize airplanes with an MCTW of exactly or very near 12,500 pounds. The operators assert that these airplanes are capable of operating safely at maximum takeoff weights in excess of 12,500 pounds. In addition, they have indicated that this weight limit has the effect of reducing safety margins by preventing the installation of additional navigational equipment and by preventing the installation of increased fuel reserves. Based on these comments and requests and the claimed overall safety benefit, the FAA issued a specific proposal (Notice No. 78-14, 43 FR 46734, October 10, 1978) to allow certification and operation of certain small airplanes at MCTW's in excess of 12,500 pounds.

Current airworthiness standards exist for two basic designations of airplanes: Part 23 for airplanes 12,500 pounds or under having nine or less passenger seats and Part 25 for transport category airplanes. Commuter airlines and air taxi operators in the United States, which have grown substantially in recent years, have demonstrated a need for airplanes which are not fully transport category but exceed the size limitations of Part 23.

Recognizing the need for improved standards for airplanes intended for commuter operations, the Administrator initiated a three-phase program. The first phase was the issuance of a revised Part 135, "Air Taxi Operators and Commercial Operators" on September 26, 1978 (43 FR 46742, October 10, 1978) which aligned the rules for those operations more closely with those of Part 121. The second phase was the initiation of the Light Transport Airplane Airworthiness Review (43 FR 60846, December 28, 1978) which will result in a separate set of airworthiness standards for multiengine airplanes with a suggested 30 passenger seating capacity and maximum gross weight of about 35,000 pounds. The third phase was the issuance of Notice 78-14 initiating this rulemaking action by proposing an increase in approved takeoff weights and passenger seating capacities for existing small airplanes that meet stated requirements.

Notice 78-14 proposed special certification requirements and changes to operating rules applicable to air taxis and commercial operators of small airplanes which would allow the design capability of certain existing propeller-driven multiengine small airplanes to be more fully utilized. The proposed certification requirements are of an interim nature and therefore formulated as a Special Federal Aviation Regulation (SFAR).

The essential provisions that were proposed in Notice 78-14 are being adopted by this amendment. The new rules will allow the certification of propeller-driven multiengine small airplanes with a passenger seating configuration of between 10 and 19 seats that were originally type certificated in accordance with Part 23 of the FARs in effect on March 13, 1971 or later. The new rules will also allow the certification and operation, with appropriate restrictions and limitations, of small propeller-driven multiengine airplanes at maximum takeoff weights in excess of 12,500 pounds.

The interim nature of the SFAR is reflected in the same limits imposed. The amendment provides that an application for aircraft supplemental or amended type certification under the SFAR must be filed within two years after the effective date of the SFAR, while production of airplanes certificated with maximum takeoff weights in excess of 12,500 pounds will be limited to 10 years after the effective date of the SFAR. The 10 year period is intended to provide the time needed to develop the new FAR Part 24 and for airplane manufacturers to demonstrate compliance with the new part.

The international implications of the amendment should be noted. The United States as a contracting State of ICAO is under agreement to comply with the Covention on International Civil Aviation. Annex 8 to the Convention contains international standards of airworthiness applicable to certification of airplanes having an MCTW in excess of 5,700 kg (approximately 12,500 pounds). The airworthiness standards set forth in the SFAR are not intended to and do not meet the Annex 8 requirements. Therefore, airplanes certificated in accordance with the SFAR that operate at weights in excess of 5,700 kg would be prohibited from international navigation unless specifically allowed by the countries of overflight or entry. These airplanes' airworthiness certificates would be appropriately endorsed. In addition, the international airman licensing and aircraft operating provisions in Annexes 1 and 6 to the Convention on International Civil Aviation must be met to operate these airplanes on international flights. The FAA is aware of the potential problems that this dichotomy will create. It is the FAA's intention to have this matter brought to ICAO's attention for resolution at an early date.

Turbojet powered multiengine airplanes are not covered in this amendment because these high performance airplanes require more stringent airworthiness provisions than those applicable to propeller driven multiengine small airplanes. Therefore, at the present time, Part 25 of the FARs, where applicable, continues to be an appropriate standard for these airplanes.

Interested persons have been afforded an opportunity to participate in the making of these amendments and due consideration has been given to all matter presented. A number of substantive changes and changes of an editorial and clarifying nature have been made to the proposed rules based upon relevant comments received and upon further review within the FAA. Except for minor editorial and clarifying changes and the substantive changes discussed below, these amendments and the reasons for them are the same as those contained in Notice No. 78-14.

These amendments implement the President's directive (Executive Order 12044) that regulations be as simple as possible and not impose unnecessary burdens on the economy or on the regulated public. They also are designed to promote the public interest by increasing safety, availability of aircraft, and efficiency.

DISCUSSIONS OF COMMENTS

Twenty-two individual sets of comments were submitted in response to Notice 78-14. Many of these addressed more than one aspect of the proposals. While the great majority of the commenters were in general agreement with the objectives of the proposals, a number of them offered criticisms or suggested changes to the proposed rules or requested clarification and guidance on compliance with the rules.

One commenter recommended that the SFAR not be adopted on the ground that small airplane airworthiness standards would be applied to airplanes of over 12,500 pounds which up to this time have been required to meet transport category standards. The FAA does not agree. The SFAR incorporates additional airworthiness requirements designed to provide the necessary level of safety for a type of airplane that has not heretofore had regulations specifically developed for it. As noted in the background discussion, the SFAR provides interim standards to enable greater utilization of existing airplanes when those airplanes meet the higher standards of the SFAR even though they may not meet transport category certification requirements.

Among the comments received were recommendations for various requirements not proposed in the notice. Among these were recommendations for less than the minimum number of required exits in freight-only airplanes, for determination of takeoff distance based on criteria different than currently required, for bird strike protection in front of pilots, for establishment of life limits for components not presently subject to such limits, and freedom from flutter after various trim tab failures. None of these recommendations were supported by justification from a safety standpoint for imposing the additional burden or lesser standard involved and the FAA does not have information to indicate the need for such requirements at this time.

The comments related to specific elements of the proposal are discussed below under the like-numbered paragraphs of the SFAR and the applicable Part 135 sections as proposed.

1. *Special Federal Aviation Regulation*

Section 1. *Applicability.*—Six commenters questioned the need to impose the additional performance requirements of Appendix A, Part 135, in order to achieve an increase in passenger seating capacity or an increase in maximum certificated takeoff weight (MCTW). These commenters asserted that the requirements contained in SFAR 23 are adequate. At the other extreme, one commenter recommended that Part 25 performance requirements be made applicable for weights exceeding 12,500 pounds. Such generalized comments, however, do not address the reasons for the proposed interim SFAR standards which have been set forth in the various notices explaining the Administrator's three-phase program or provide a basis for now altering the proposals.

In more specific vein, one commenter believed it inconsistent that under the proposal some 19 passenger airplanes would have to comply with the entire new SFAR whereas others would have to comply only with Appendix A to Part 135. This commenter recommended that all 10-19 passenger airplanes, regardless of weight, comply with the proposed requirements that would be applicable to airplanes originally type certificated to Part 23 regulations in effect on March 13, 1971, or later. Under the proposal, airplanes to be certificated at MCTW over 12,500 pounds regardless of the number of passengers would have to meet not only the modified requirements of Appendix A but the additional requirements contained in the new SFAR.

The difference in certification requirements under the proposed SFAR is not dependent on the number of passengers but the MCTW of each airplane. Section 1.(a) of the SFAR is limited to those airplanes that do not exceed 19 passenger seats, have a MCTW of 12,500 pounds or less, and were originally type certificated to include Amendment 23-10. Section 1.(a) has been clarified with respect to the weight limitations. Section 1.(b) on the other hand, and in response to another commenter's request for clarification, covers all normal category airplanes to be certificated at MCTW in excess of 12,500 pounds. Thus to certificate an Amendment 23-10 airplane for 19 passengers at an MCTW in excess of 12,500 pounds, the airplane would have to meet the requirements of section 1.(b). Since the added requirements of section 1.(b) go with the increased weight above 12,500 pounds, these is no inconsistency in the applicability.

With respect to its applicability for other than Amendment 23-10 airplanes, the new SFAR does not apply to a normal category airplane, originally type certificated in accordance with Part 23 in effect prior to March 13, 1971 (i.e. not including Amendment 23-10), that is to be certificated for an increase in passenger seating capacity unless that airplane is to be certificated for a maximum takeoff weight in excess of 12,500 pounds. If the weight does not exceed 12,500 pounds, the regulations incorpoated in the type certificate apply to an increase in passenger seating capacity as well as to an increase in MCTW that does not exceed 12,500 pounds. Furthermore, this rulemaking action is not intended to impose retroactive requirements on airplanes of older type design, as questioned by one commenter, when there is to be no change in the number of seats or MCTW. It should also be noted that under section 1.(b) of the SFAR, there is no limitation on the number of passenger seats for which the airplane may be certificated when the MCTW exceeds 12,500 pounds although regulations governing operations impose other limitations on the number of passengers. Section 1.(b) has been changed to clarify that the passenger seating configuration may be increased if the applicant so requests.

One commenter objected to provisions of the SFAR which were interpreted as allowing increased weight and derogated performance at the expense of safety. However, contrary to the commenter's concern, an airplane must comply with the minimum performance standards as well as the other requirements of the SFAR, under which it will be safe to operate notwithstanding the increase in weight and lessened performance. Under the SFAR, if increased weight prevents the airplane from meeting the minimum performance requirements, the airplane does not meet the required level of safety and it would not be certificated.

With respect to section 1.(b), six commenters contended tht compliance with the performance requirements of Appendix A of Part 135 at all operating weights below 12,500 pounds, would unfairly penalize airplane performance. Accordingly to these commenters, the Appendix A performance requirements, although appropriate for MCTW above 12,500 pounds, place additional unneeded restrictions on airplane weight on hot days, at high altitudes, and on short runways when the takeoff weight does not exceed 12,500 pounds in any event. Asserting that such restrictions are inconsistent with the stated purpose of the proposal to allow full utilization of an airplane's design capabilities, they recommended that SFAR 23 performance standards apply to weights up to 12,500 pounds and Appendix A performance standards to weights above 12,500 pounds.

The FAA agrees with the analysis that shows compliance with Appendix A performance requirements may be unnecessarily restrictive at weights of up to 12,500 for airplanes that were not to meet Appendix A as a type certification requirement. Moreover, for airplanes to be certificated under the SFAR at maximum certificated takeoff weights of more than 12,500 pounds, it was not the FAA's intent to change the certification basis of such airplanes for takeoff weights of 12,500 pounds or less. Thus, where an airplane's preexisting certification basis does not include Appendix A but the airplane with 10 or more passenger seats is qualified for operations under Part 135 or is certificated under Part 23 in effect prior to Amendment 23-10 and is to be used only in Part 91 operations, there appears to be no safety reason why the airplane's certification basis needs to be changed for weights at which the airplane is currently operating. Although the commenters emphasized only the performance requirements of Appendx A as being unnecessarily restrictive at weights below 12,500 pounds, the FAA has determined that any of the requiements of Appendix A may be included within the exception for an airplane whose certification basis provides the required level of safety, regardless of the number of passengers at weights up to 12,500 pounds. Therefore, an exception has been added as section 5.(b) of the SFAR which provides relaxation from the requirements of the notice to allow compliance with the regulations incorporated in the type certificate in lieu of compliance with Appendix A at takeoff weights of 12,500 pounds or less for specified airplanes. For all takeoff weights above 12,500 pounds the airplane must meet the Appendix A requirements as modified by the other section 5 exceptions.

Section 1.(b)(3) of the SFAR requires compliance with sections 7 through 14 of the SFAR as an additional condition for certification at MCTW in excess of 12,500 pounds. For reasons similar to those discussed above in connection with Appendix A requirements, it was the intent that these requirements not constitute a new certification basis for takeoff weights at or below 12,500 pounds but rather provide additional requirements for takeoff weights in excess of 12,500 pounds. Section 1.(b)(3) has been amended to make this clear.

Two commenters asked what modifications it would be permissible to make in order to take advantage of the proposal. It was not the intent to identify or otherwise limit the specific modifications that might be necessary in any particular case to meet the proposal. Any modification that would enhance an airplane's ability to meet the applicable requirements of the new SFAR would be permissible. In this connection, however, it should be noted that the new SFAR by its terms is limited to amended and supplemental type certification of airplanes previously certificated in the normal category. Therefore, the limitations contained in § 21.19, and in Subparts D and E of Part 21 relative to such certification, also apply.

One commenter objected to the proposal in the belief that it would increase the noise contours due to the added weight requiring more power for takeoffs of airplanes recertificated under section 1.(b). On the other hand, two commenters suggested that the maximum allowable noise should be increased above the levels allowed for small airplanes as proposed in the notice. The considerations involved in these comments result from proposed SFAR section 1.(c) which would define an airplane certificated under section 1.(b) as a small airplane for purposes of Part 36. The comments do not explain how or why persons on the ground exposed to the modified airplanes would be subjected to more noise than is now permitted for the existing certificated airplanes.

The proposal will not increase noise contours. The SFAR standards must be met regardless of engine power or thrust available or used for takeoff. Therefore, the effect of the increased weight on takeoff noise output must be accounted for and kept within present noise limits. The comments do not provide any basis for modifying the proposal with respect to noise.

With further reference to paragraph 1.(c), since "small aircraft" are defined in Part 1, the intent was that airplanes certificated under section 1.(b) be considered small airplanes for purposes of the parts listed rather than be "defined" as small airplanes. Accordingly, a nonsubstantive change has been made in section 1.(c) to clarify the point. The definitions of small and large aircraft set for in Part 1 remain unchanged.

Finally, upon review of section 1.(c) by the FAA, it is noted that Part 139 was inadvertently omitted from the listing of Parts under which the an airplane certificated under section 1.(b) of the SFAR would be considered a small airplane. FAR § 139.12a provides for the issuance of a limited airport operating certificate for an airport serving CAB-certificated air carriers conducting only unscheduled operations with small aircraft. Unless the newly certificated aircraft are "small" aircraft, airports serving them would no longer be eligible for the limited certificate and would have to obtain a regular or full certificate. For this reason, Part 139 is added to the listing in section 1.(c).

2. *Eligibility.* No unfavorable comments were received on the proposal and the section is adpoted without substantive change.

3. *Production Limitation.* On commenter recommended that the proposed 10-year limitation for receiving original airworthiness certificates based on an amended or supplemental type certificate issued under the SFAR be increased and made indefinite. This commenter cited the high cost of certification as the only justification. The FAA agrees that the high cost of cerfification is one factor to be considered. However, in view of the proposed Part 24, the intent is that the SFAR provisions be self-limiting as to time. It is the intent of Part 24 to construct a regulation that reflects the state of the art for the entire aircraft. Therefore, the reason for the limitation is to ensure that once Part 24 aircraft are available, these will be the aircraft on the market because Part 24 aircraft will represent a significance safety increase over the aircraft produced pursuant to this SFAR.

Another commenter requested verification of his understanding that once an airplane receives an airworthiness certificate under the SFAR procedures, no life limit is otherwise imposed by the SFAR. That understanding is correct. The 10-year limitation applies only to obtaining the initial airworthiness certificate under an amended or supplemental type certificate issued under the SFAR. Once issued, the duration of the airworthiness certificate is governed by the same rule applicable to other standard airworthiness ceratificates.

Both of the foregoing comments indicate there may have been some ambiguity in the proposed rule due to the reference to an "original" airworthiness certificate. Actually, in a case where an aircraft is modified to conform to an amended or supplemental type certificate, it is possible that there may not be an issue of an original airworthiness certificate. The intent was to impose the 10-year limit on obtaining whatever form of airworthiness certificate results from the changed type certificate. Section 3 has therefore been clarified by specifying an original or amended airworthiness certificate.

4. *Restrictions.* No unfavorable comments were received on the proposal and the section is adopted without substantive change.

5. *Exceptions.* No unfavorable comments were received on section 5.(a) and it is adopted without substantive change.

Section 5.(b) contains the general exception to the requirements of Appendix A of Part 135 for certain airplanes. This was discussed in connection with section 1.(b) of the SFAR concerning applicability of the SFAR to airplanes with an MCTW of over 12,500 pounds.

With reference to landing performance requirements, one commenter stated that the proposal could be interpreted to require a double application of the effective runway length factor specified in § 7 of Appendix A of Part 135. The ambiguity results because the airplanes are also subject to the requirements of §§ 135.385 and 135.387 which specify like factors. The problem does not arise outside the SFAR since the landing requirements of Appendix A apply only to normal category airplanes while those of §§ 135.385 and 135.387 apply only to large transport category airplanes. The SFAR as proposed could be interpreted to mean that airplanes would be subject to both sets of requirements. The FAA agrees that the effective runway length requirement should be clarified since there is no intent that the factor be applied twice. In addition, the proposed landing performance requirements did not require consideration of wind corrections. [For these reasons, the proposed requirement to comply with § 7, as well as with related § 19.(c), of Appendix A of Part 135 has been deleted and the applicable landing performance requirements, not covered in §§ 135.385 and 135.387, are included in a new section 5.(c) of the SFAR.]

The fatigue evaluation standards set forth in proposed section 5.(b) [section 5.(d) as adopted] are stricter than those in Appendix A and apply where the MCTW exceeds 12,500 pounds. One commenter recommended that the proposed fatigue requirement also be applied to those airplanes whose passenger seating capacity is increased above nine even though the weight does not exceed 12,500 pounds. However, the commenter presented no justification to show that the current safety requirements are inadequate or that the fatigue evaluation standards should be extended to airplanes of 12,500 pounds or less.

Another commenter objected to the proposal which would allow fatigue strength evaluation to be conducted by analysis alone. It was contended that tests should be required because of adverse service experience reported with surplus military aircraft which had sustained structural damage due to overloading. However, such experience is not relevant to type certification standards since evaluation of the structure must be made under the conditions and loads expected in service. The FAA does agree that there should be limitations on the analysis-alone evaluation and a recent amendment to § 23.572(a)(1) provides such a limitation. Accordingly, the fatigue strength investigation requirement is modified to be consistent with the current Part 23 type certification requirement by specifying that analysis alone is acceptable only when it is conservative and applied to simple structures.

Section 5.(c) proposed additional door and exit requirements considered necessary for safety at the higher weights. Two commenters suggested that movable seat backs be allowed to obstruct window-type emergency exits but presented no evidence to show that an equivalent level of safety would be achieved. The commenters also questioned the need for the door locking mechanism to be visible from within the fuselage; however, even though the proposal requires visual inspection by crewmembers, it does not specify that the inspections must be conducted from within the airplane. Thus, external inspection, as of cargo doors, could be made though appropriate openings or transparent coverings. Finally, one commenter was of the opinion that the number of emergency exits could be reduced so long as the 90-second evacuation test was met; however, those are not alternative requirements, and no justification was given for not meeting both. The door and exit requirements are adopted as substantively proposed and designated section 5.(e).

No unfavorable comments were received on the lighting strike protection requirements proposed in section 5.(d) and it is adopted as section 5.(f) without substantive change.

Three commenters questioned the need for the fire containment requirement of section 5.(e) when there are other requirements that speak to fire extinguishment. However, extinguishment and containment are separate requirements. Containment prevents an engine fire from spreading to the rest of the airplane before the fire can be extinguished. With respect to containment, the proposal referred to burn-through of the external skin whereas any burn-through that could create additional hazards is the condition to be prevented. The paragraph has been amended to make this clarification. Several commenters suggested the use of heat-resistant coatings in place of fireproof cowlings; however, the basic requirement is for containment without specifying the means. A heat-resistant coating that merely delays burn-through would not be in compliance with the requirement. Finally, a number of commenters objected to applying the fire containment requirement to turbine-powered airplanes, but their asserted lack of fire history statistics does not justify avoidance of a safety standard intended to cover the over 12,500 pound weight category for which there is no actual operating experience. The requirements are adopted as substantively proposed and designated as section 5.(g).

Section 5.(f) proposed that the flammable fluid fire protection requirements of Part 25 be used in lieu of section 57 of Appendix A. Seven commenters questioned the need for and practicability of complying with the more stringent requirements of Part 25. However, in this connection, it should be noted that the regulatory intent is for all aircraft to conform to a uniform minimum standard for flammable fluid fire protection. To this end, FAR Parts 23, 27, and 29 were amended after the issuance of Notice 78-14 to be consistent with updated Part 25 requirements. At the time of issuing Notice 78-14, the minimum acceptable standards for flammable fluid fire protection for the new category SFAR airplanes was contained in § 25.863 then in effect. The commenters have presented no justification for relaxing the safety standard set forth in the Notice, and section 5.(f) [redesignated 5.(h)] is adopted as proposed.

6. *Additonal requirements—general.* This section states, in effect, that the additonal requirements specified in succeding sections of the SFAR apply to airplanes to be certificated at MCTW in excess of 12,500 lbs. Two commenters raised general objections—one that such requirements should not apply if the passenger capacity does not exceed 19, the other that retrofit to such standards would be costly in weight and dollars. The FAA does not deny that to meet the additional requirements may be costly, but the commenters presented no reasons why the requirements, considered collectively, would not be necessary in the interest of safety or why 19 passengers should be a cutoff point rather than 12,500 pounds. The FAA considers the SFAR requiements to be minimum safety standards necessary for the new category airplanes. Moreover, nothing compels exceeding a 12,500 pound MCTW so that compliance is a matter of choice with an operator who must decide if such compliance is economically feasible in his particular case.

Comments addressed to individual additional requirements are discussed below.

7. *Compartment interiors.* This section states various requirements relating to cabin materials, smoking, disposal receptacles, lavatories, and hand fire extinguishers. All the comments objecting to section 7 were directed to the requirement for materials. One group of commenters objected because of the alleged high cost to retrofit older airplanes and the alleged lack of history of in-flight fires on this type aircraft. Two other commenters contended that it would not be economically feasible to comply immediately with the interim material requirements.

The FAA does not agree that the cost of cabin interior materials to meet the flammability requirements of proposed section 7.(a) is sufficient justification for not imposing them. Neither have the commenters shown that the alleged lack of history of in-flight fires supports a withdrawal of the requirement. Actually there is no operating history for this new class of airplane and the commenters have not addressed the need for safety measures necessary to achieve the level of safety at the higher weights. The proposed cabin material requirements are the same as those specified for transport category airplanes under Part 25. The FAA does agree that it would be reasonable to grant additional time in which to install the materials. The burden of refurbishing the cabin materials would be substantially lessened if operators could take advantage of periods when their airplanes are down for extended periods.

In view of these considerations, the cabin material requirements of section 7 and the Appendix are deleted from the SFAR. In place thereof, the operating rules of Parts 91 and 135 are amended by adding a requirement that airplanes certificated under the SFAR at MCTW in excess of 12,500 pounds must meet the compartment interior material requirements of § 25.853(a), (b), (b-1), (b-2), and (b-3) within one year after receiving an airworthiness certificate under the SFAR.

8. *Landing Gear.* In response to one inquiry as to the applicability of § 25.721(b) to fixed landing gear airplanes, the rule requires compliance when one or more landing gear legs is not extended. Since this condition would not exist in a fixed landing gear airplane, the rule would not be applicable. Resubstantiation of fixed landing gear to Part 25 ground load standards, as questioned by that commenter, would not be necessary since the initial airplane certification under Part 23 is sufficiently conservative for a maximum zero fuel weight that does not exceed 12,500 pounds.

9. *Fuel system components crashworthiness.* This section requires compliance with certain Part 25 rules under various emergency landing conditions. There should be no confusion as to their applicability in the case of fixed landing gear airplanes as questioned by one commenter. Thus, § 25,561(b)(2) clearly states that the wheels are retracted (where

applicable) and then specifies the inertia forces that may result. It is these inertia forces that the fuel tanks must be able to resist irrespective of the type of landing gear. Section 25.994, by its terms, is clearly not applicable to fixed landing gear airplanes since it refers specifically to the condition of wheel-up landing.

10. *Shutoff means.* No specific objection was made to this section and it is adopted substantively as proposed.

11. *Fire extinguishing systems.* The National Transportation Safety Board (NTSB) expressed the view that a fire detection system is a prerequisite to a fire extinguishing system. Under the proposal, turbopropeller-powered airplanes would be required to have a detector system in compliance with Part 135, Appendix A, as would multiengine reciprocating engine powered airplanes incorporating turbosuperchargers under current § 23.1203. However, older airplanes not covered by current § 23.1203 and those not equipped with turbosupercharger-equipped reciprocating engines would not be required under the proposal to have fire detection systems. The NTSB therefore recommended that the final rule require fire detection systems for all reciprocating-engine powered airplanes. The NTSB views were also expressed by another commenter. The FAA agrees. The intent of the proposal to provide adequate fire extinguishment can best be achieved by inclusion of the detecting system requirement. Moreover, without a detection system, airplanes that could be certificated under the proposed SFAR at the higher MCTW would be operating at a different and lower level of safety than that now applicable to Part 23 airplanes. Accordingly, to assure that necessary safety standards are applied uniformly to all airplanes eligible for certification under the SFAR, paragraph 11 is modified to include the requirement for a fire detection system in all airplanes.

A number of commenters objected to the requirement for the two-bottle discharge extinguisher capability in engine compartments. It was their contention that in-flight fire statistics did not justify such redundancy and that the over-protection would impose a payload sacrifice and be expensive. In this connection, neither Part 23 nor Appendix A of Part 135 requires an extinguisher system. Upon reconsideration of the proposal, and consistent with the recognized need for improved standards for the category of airplanes to be certificated under the SFAR, the FAA has concluded that a system to provide a "one-shot" discharge to each designated fire zone is the minimum safety standard for the new category airplanes. Section 11.(b) [now 11.(b)(2)] has been changed accordingly.

12. *Fire extinguishing agents.*

13. *Extinguishing agent containers.*

14. *Fire extinguishing system materials.*

The comments received were directed to fire extinguishing systems in general under section 11 rather than to the specific areas covered in sections 12, 13, and 14. Sections 12, 13, and 14 are adopted as substantively proposed. In the notice, section 13 inadvertently referenced § 25.1189 although by subject matter it is clear that § 25.1199 was intended. Section 13 has been corrected accordingly.

15. *Expiration.* One commenter's inquiry regarding applicability of this section appears to be questioning, in effect, the duration of supplemental and amended type certificates issued under the SFAR and the airworthiness certificates derived from them. These points have been discussed in detail earlier in this preamble in connection with sections 1 and 3. The section is adopted substantively as proposed.

Discussion on proposals concerning Part 135.

FAR § 135.169. No unfavorable comments were received on the proposal to amend § 135.169 and the proposal is adopted without substantive change. However, the general reference to airplane type certificated in compliance with the SFAR has been expanded to refer separately to those certificated under sections 1.(a) and 1.(b). This distinction is necessary for clarity because of the separate references required in § 135.399.

FAR § 135.399. The proposed addition to § 135.399 would require airplanes certificated under the SFAR to comply with the landing limitations that are applicable to large transport category turbine-engine powered airplanes under Part 135 at destination and alternate airports. Two commenters believed it would be confusing to incorporate regulations whose indicated applicability is only to large transport category turbine-engine powered airplanes when the affected airplanes are non-transport category and include those with reciprocating engines. The FAA agrees and the paragraph, as adopted, has been changed to clarify this applicability.

One commenter noted that the proposed § 135.399(b) would require compliance with landing limitations but nothing was proposed to revise § 135.399(a) to implement the takeoff limitations for the new SFAR airplanes. According to the commenter this was a serious omission because takeoff performance limitations are usually more critical in operation. The FAA agrees that takeoff weight limitation requirements are as much applicable to SFAR airplanes as they are to the normal category airplanes already covered by the rule. Section 135.399(a) is amended accordingly. In addition, the landing weight limitation requirements applicable to airplanes certificated in accordance with paragraph 1.(a) of the SFAR (i.e. airplanes meeting Appendix A of Part 135) are transferred from § 135.399(b) as proposed to § 135.399(a). This non-substantive change makes § 135.399(a). This non-substantive change makes § 135.399 internally consistent since landing weight limitations of non-SFAR airplanes meeting Appendix A are already covered in § 135.399(a).

ADOPTION OF THE AMENDMENT

Accordingly, the Federal Aviation Regulations (14 CFR Chapter I) are amended, effective October 17, 1979.

(Secs. 313(a), 601, 603, and 604, Federal Aviation Act of 1958 (49 U.S.C. 1354(a), 1421, 1423, and 1424); Sec. 6(c), Department of Transportation Act (49 U.S.C. 1655(c))).

NOTE—The FAA has determined that this document involves a regulation which is not significant under Executive Order 12044, as implemented by DOT Regulatory Policies and Procedures (44 FR 11034; February 26, 1979). A copy of the final evaluation prepared for this action is contained in the regulatory docket. A copy of it may be obtained by writing to Raymond E. Ramakis, Safety Regulations Staff (AVS-24), Federal Aviation Administration, 800 Independence Avenue, S.W., Washington, D.C. 20591.

Amendment 135-3

Commuter Pilot in Command Operating Experience Requirements

Adopted: January 30, 1980 **Effective: March 1, 1980**

(Published in 45 FR 7246, February 1, 1980; Republished Without Change in 45 FR 7540, February 4, 1980)

SUMMARY: This amendment requires that each commuter air carrier pilot meet increased operating experience levels before serving as a pilot in command. The intended effect is to upgrade the amount of pilot experience in the aircraft being flown in order to achieve a higher level of safety. The necessity for this amendment is indicated by recent fatal commuter accidents involving pilots with low pilot time in the aircraft being operated.

FOR FURTHER INFORMATION CONTACT:

Mr. Edward McCorvey, Regulatory Projects Branch, Safety Regulations Staff, Associate Administrator for Aviation Standards, Federal Aviation Administration, 800 Independence Avenue, SW., Washingtion, D.C. 20591; telephone (202) 755-8716.

ADDRESS: Comments on this proposal may be mailed in duplicate to:

Federal Aviation Administration, Office of the Chief Counsel, Attn: Rules Docket (AGC-24), Docket No. 20011, 800 Independence Avenue, SW., Washington, D.C. 20591.

or be delivered in duplicate to:

Room 916, 800 Independence Ave., SW., Washington, D.C. 20591.

Comments delivered must be marked "Docket No. 20011. Comments may be inspected at Room 916 between 8:30 a.m. and 5:00 p.m.

SUPPLEMENTARY INFORMATION:

BACKGROUND

On September 24, 1978, the FAA issued an extensive set of new and revised Part 135 regulations governing commuter air carriers and on-demand air taxi operators. These were published in the FEDERAL REGISTER on October 10, 1978 (43 FR 46783; Docket No. 16097). These regulations had two basic premises. First, operating experience over a representative number of years established the need to generally upgrade the requirements of Part 135. Second, in the light of airline economic deregulation legislative proposals which were progressing through Congress in 1977 and 1978, it was contemplated that the air taxi industry generally, and especially its commuter air carrier segment, would be called upon under deregulation to provide even more air transportation services than that rapidly growing air transportation component had furnished prior to 1977. It was expected that under economic deregulation, large air carriers would pull out of small markets and that in many cases commuter air carriers would step in and shoulder the job of providing air transportation.

Accordingly, in the development of revised Part 135, the agency placed heavy emphasis upon upgraded requirements for commuter air carriers. These requirements were constructed in the regulations by making some provisions explicitly applicable to commuter air carrier operations while others were made applicable to those aircraft customarily found in commuter operations.

Congress likewise recognized the increased role that commuter air carriers would be called upon to assume under deregulation when it passed the Airline Deregulation Act of 1978 on October 24, 1978 (PL-95-504). In that Act, Congress required the FAA to establish regulations which, to the maximum feasible extent, provide a level of safety to passengers traveling on commuter air carriers equivalent to that afforded passengers traveling on certificated carriers. Congress also charged the agency with the duty to periodically assess the pertinent safety achievements and report to the Congress. The agency had already recognized the need for a continuing review of Part 135 safety regulations when it noted in the preamble to revised Part 135 that a review of those regulations would be announced early in 1980.

The foresight and wisdom of Congress and the agency in planning for deregulation has been established. Commuter air carriers have enjoyed remarkable growth in the slightly more than 1 year since the Airline Deregulation Act was passed and, in general, that industry has responded well to the challenges.

NEED FOR THIS REGULATORY CHANGE

During 1979 there have been 13 fatal accidents in commuter air carrier operations, several of which involved multiple fatalities.

The FAA has analyzed these accidents with the goal of identifying adverse trends and determining how these trends can be stopped. This analysis shows that there were significant numbers of single pilot operations where the pilot was not able to cope with an abnormal or emergency situation arising during the takeoff or early phase of flight. Further analysis reveals that the single pilot, although possessing significant experience in multiengine airplanes, had a low experience level in the specific make or model being operated at the time of the accident. For example, in a March 1, 1979, accident which killed the pilot and all seven passengers, the pilot was engaged in his first flight in the particular make and model being flown, although he did have 15 hours in a virtually identical make and model of airplane. In an accident on August 9, 1979, resulting in three fatalities, the single pilot had 30 hours in the make and model. In an October 8, 1979, accident which killed all eight persons on the airplane, the single pilot had 28 hours in the make and model, which included 20 hours line operating experience and a flight check with the company check pilot. However, the check pilot did not cover emergency procedures on the flight check. The FAA withdrew the check pilot's authorization on account of this deficiency. Finally, on November 2, 1979, the pilot and 5 passengers were killed in a commuter air carrier accident. Although the pilot had a total of approximately 10,000 total hours, he had only 2 hours in the make and model used on the fatal flight.

These accidents and general operating experience show that extensive total time or multiengine time do not establish that a pilot in command can safely operate a particular make and model of aircraft. Accordingly, there is a compelling need to establish minimum operating experience requirements which must be met before a pilot may be designated to serve as pilot in command on a commuter air carrier passenger-carrying flight. Moreover, although the single pilot operations accidents which have occurred were in VFR conditions, they indicate pilot deficiencies which have serious implications in operations under the greater demands imposed in IFR conditions where a single pilot operation is conducted with an autopilot in lieu of a second in command. If abnormal or emergency situations similar to those which occurred in the accidents discussed above were to occur under IFR conditions, the single pilot with a low level of experience in the make and model would be faced not only with handling the specific problem, but also with operating the aircraft under IFR conditions. Low levels of experience in the make and model of aircraft flown present an unacceptable safety risk in this latter type of situation also. The FAA recognizes that this amendment may have an economic impact on the affected certificate holders; however, the safety consideration, set forth above, requires its adoption.

THE AMENDMENT

These amendments will require two things. First, cetain minimum levels of operating experience in the make and model of aircraft as a pilot in command under the supervision of a qualified check pilot must be acquired before a person may be designated to serve as a pilot in command in any commuter air carrier passenger carrying operation. The number of hours ranges from 10 for a relatively simple single-engine piston aircraft to 25 for a complex, high performance turbojet airplane. The operating experience requirement is similar in many respects to that required of pilots of large, certificated carriers in § 121.434. Thus, this change follows the mandate of the Airline Deregulation Act of 1978.

Second, with respect to the single pilot autopilot operation, before a person can serve as a pilot in command of a commuter air carrier passenger flight, that person must have logged not less than 100 hours in the make and model of aircraft to be flown and have met all other pertinent requirements of Part 135. This change would ensure that a pilot has aircraft familiarity and proficiency sufficient to adequately cope with situations such as those encountered in the single pilot accidents discussed above if those or similar situations occur under IFR conditions.

Persons designated prior to the effective date of this amendment as pilot in command on the make and model of aircraft to be flown are not subject to the operating experience requirement. The 100-hour requirement under § 135.105 applies to all pilots in command, including those designated as pilot in command prior to the effective date of this amendment. The 100 hours may be obtained in operations under VFR conditions or in operations governed by Part 91, or it may have been accumulated in operations under this Part prior to the effective date of this amendment.

NEED FOR IMMEDIATE ADOPTION

In view of the number and nature of recent commuter air carrier accidents, there is an urgent need for effecting these amendments as soon as possible. Accordingly, I find that notice and public procedure are impracticable and contrary to the public interest. However, interested persons are invited to submit such comments as they may desire regarding these amendments. Communications should identify the docket number and be submitted in duplicate to the address specified above. All communications received on or before April 1, 1980, the date for comments, will be considered by the Administrator and these amendments may be changed in light of the comments received. All comments received will be available, both before and after the closing date for comments, in the Rules Docket for examination by interested persons.

Commenters wishing the FAA to acknowledge receipt of their comments submitted in response to this invitation to comment must submit with those comments a self-addressed, stamped postcard on which the following statement is made: "Comments to Docket Number 20011." The postcard will be date/time stamped and returned to the commenter.

ADOPTION OF THE AMENDMENT

Accordingly, Part 135 of the Federal Aviation Regulations (14 CFR Part 135) is amended effective March 1, 1980.

(Secs. 313(a), 601, and 604 of the Federal Aviation Act of 1958 (49 U.S.C. §§ 1354(a), 1421 and 1424); sec. 6(c) of the Department of Transportation Act (49 U.S.C. § 1655(c)).)

NOTE—The Federal Aviation Administration has determined that this document involves a regulation which is not significant under Executive Order 12044, as implemented by DOT Regulatory Policies and Procedures (44 FR 11034; February 26, 1979). In addition, the FAA has determined that the expected impact of the regulation is so minimal that it does not require an evaluation.

Amendment 135-2A

Increase in Approved Takeoff Weights and Passenger Seating Capacities: Correction

Adopted: April 7, 1980 **Effective: April 14, 1980**

(Published in 45 FR 25046, April 14, 1980)

SUMMARY: This action makes editorial corrections to Special Federal Aviation Regulation (SFAR) 41 adopted on September 7, 1979. The SFAR prescribes additional airworthiness requirements applicable to certain existing multiengine small airplanes to allow an increase in approved takeoff weights and passenger seating capacities.

FOR FURTHER INFORMATION CONTACT:

Eli S. Newberger, Safety Regulations Staff, AVS-24, Federal Aviation Administration, 800 Independence Ave., S.W., Washington, D.C. 20591, Telephone (202) 755-8716.

SUPPLEMENTARY INFORMATION:

This amendment of SFAR 41 (44 FR 53723, September 17, 1979) is editorial in nature to provide an omitted date, change an incorrectly stated date, and delete a regulatory reference listed in error.

As indicated in the preamble, SFAR 41 is applicable to existing propeller-driven multiengine small airplanes. The existing airplanes eligible for amended or supplemental type certificates are those type certificated prior to the effective date of the SFAR; i.e., October 17, 1979. This amendment provides the omitted date in paragraphs 1.(a) and 1.(b).

Paragraph 5.(b)(3) of the SFAR inadvertently cites the certification cutoff date of the given class of airplanes as July 1, 1970. Since this paragraph parallels § 135.169(b)(3), for consistency, the date is corrected to July 19, 1970.

Of the three sections of Appendix A, Part 135, referenced in paragraph 5.(c) of the SFAR, section 19.(b)(3) does not relate to landing requirements and was inadvertently included. Paragraph 5.(c) and the corresponding preamble discussion are amended by deleting the erroneous reference.

This amendment corrects the editorial errors as noted and good cause exists for making the amendment effective upon publication in the FEDERAL REGISTER [April 14, 1980].

ADOPTION OF AMENDMENT

Accordingly, the preamble of SFAR 41 and the text of SFAR 41 of the Federal Aviation Regulations (14 CFR SFAR 41) are amended, effective April 14, 1980.

[Secs. 313(a), 601, 603, and 604, Federal Aviation Act of 1958 (49 U.S.C. 1354(a), 1421, 1423, and 1424); Sec. 6(c), Department of Transportation Act (49 U.S.C. 1655(c)).]

NOTE: The FAA has determined that this document involves a regulation which is not significant under Executive Order 12044, as implemented by DOT Regulatory Policies and Procedures (44 FR 11034; February 26, 1979).

Amendment 135-4

Technical Standard Order (TSO) Revision Program

Adopted: June 2, 1980 **Effective: September 9, 1980**

(Published in 45 FR 38342, June 9, 1980)

SUMMARY: The purpose of these amendments is to adopt a new public procedure to expedite the issuance of standards, known as Technical Standard Orders (TSO), for specified materials, parts, processes, and appliances used on civil aircraft. In accordance with Executive Order 12044, Improving Government Regulations, the new procedure will expedite TSO issuance and amendment, and will result in the substantial reduction of existing regulatory material. Consistent with the President's goal of reforming the regulatory process to eliminate unnecessary requirements, these amendments will enable the FAA to issue and amend TSO's in a timely manner. In addition, it is part of the FAA's continuing effort to simplify the Federal Aviation Regulations. The expeditious issuance of new TSO's and amendment of existing TSO's (presently published as Subpart B of Part 37) are necessary to stay current with the continuing growth and technological advances in aeronautics.

FOR FURTHER INFORMATION CONTACT:

Mr. Eli S. Newberger, Regulatory Projects Branch, AVS-24
Safety Regulations Staff
Associate Administrator for Aviation Standards
Federal Aviation Administration
800 Independence Avenue, S.W.
Washington, D.C. 20591; Telephone (202) 755-8716.

SUPPLEMENTARY INFORMATION:

BACKGROUND

Whenever a material, part, process, or appliance is to be used on an aircraft, it must be approved under the Federal Aviation Regulations (FAR) before it can be utilized. The approval can be obtained in one of the following ways: (1) under a Parts Manufacturer Approval issued under 14 CFR 21.303; (2) in conjunction with type certification procedures for a product, including approvals granted by a supplemental type certificate; (3) under a Technical Standard Order authorization or approval issued under 14 CFR Part 37; or (4) in any other manner approved by the Administrator.

One of the several methods of obtaining approval is by designing and testing the article (material, part, process, or appliance) in accordance with a TSO which contains minimum performance and quality control standards for specified articles. The standards for each TSO are those the Administrator finds necessary to ensure that the article concerned will operate satisfactorily. Since compliance with a TSO is only one method of obtaining an approval, the standards contained in the TSO are not mandatory but are only an optional way of obtaining approval for a particular article. For example, an applicant can obtain approval to deviate from a particular TSO if it shows that the design features provide an equivalent level of safety.

A TSO is not a standard of general or particular applicability designed to implement or prescribe law or policy. It does not fall within the definition of "rule" contained in the Administrative Procedure Act (5 U.S.C. 551). There is no requirement that a TSO be published as a notice of proposed rule making in the *Federal Register*.

Future TSO's will, through incorporation by reference, make maximum practical use of "voluntary standards" as defined by the Office of Management and Budget (OMB) Circular A-119, "Federal Participation in the Development and Use of Voluntary Standards," issued January 17, 1980 (45 FR 4326). By definition of OMB Circular A-119, "voluntary standards" are established generally by the private sector "voluntary standards bodies" and are available for use by any person or organization, private or government. The term includes what are commonly referred to as "industry standards" as well as "consensus standards" but does not include professional standards of personal conduct, private standards of individual firms, or standards mandated by law. "Voluntary standards bodies" are nongovernmental bodies which are broad based, multimember, domestic, and multinational organizations including, for example, nonprofit organizations, industry associations, and professional technical societies which develop, establish, or coordinate voluntary standards.

The FAA has determined, for the reasons stated in Notice 79-15, published in the *Federal Register* on October 1, 1979 (44 FR 56370), that, in the interest of safety, it is appropriate to adopt new public procedures to facilitate the issuance of TSO's for specified articles used on civil aircraft. The safety aspect of this rule making is particularly important. The fact that TSO's have been part of the complex regulatory structure of the FAA has caused a substantial lag time between regulations and state of the technology. This procedural change should advance by months and even years the implementation of technological improvements in the U.S. aviation system.

Interested persons have been afforded an opportunity to participate in the making of these amendments, and due consideration has been given to all matters presented. Significant comments received in response to Notice 79-15 are discussed below. A number of substantive, editorial, and clarifying changes have been made to the proposed rules based on relevant comments and on further review within the FAA. Except for minor editorial and clarifying changes and the changes discussed below, these amendments and the reasons for their adoption are the same as those contained in Notice 79-15.

These amendments are consistent with the agency's responsibility to review the continuing need for regulations and the need to eliminate unnecessary regulations. By eliminating TSO's from the regulations, previously published as Subpart B of 14 CFR Part 37, and making them available through the multiple procedures described below, the FAA has improved the availability of the TSO's and made it easier for the public to locate the most up-to-date standard. In addition, by removing TSO's from the agency's regulatory process, the time available for other matters within the regulatory system will be increased. This will enable the agency to respond in a more timely manner to other issues submitted by the public. This improvement of the regulatory process, to be more responsive to the public, is consistent with Executive Order 12044, issued by President Carter on March 23, 1978.

DISCUSSION OF COMMENTS

Twenty-two individual sets of public comments were submitted in response to Notice 79-15. Several of the commenters were associations that presented the views of manufacturers, operators, and pilots. While the great majority of the commenters were in general agreement with the objective of the proposal, a number of them suggested changes, requested clarification or guidance, and offered specific criticisms. Other commenters proposed changes that are beyond the scope of this rule making.

DISCUSSION OF COMMENTS TO THE NEW PUBLIC PROCEDURE

In general, the commenters concerned themselves with the following questions: How would TSO authorizations be obtained? Would foreign countries accept them? How would a request for approval to deviate from any performance standard be handled? How would an interested party request a revision to a TSO? How would a current TSO be affected when a revision to the TSO is made? How would the public comment on a draft TSO? How would the FAA revise the sections of the Federal Aviation Regulations which reference a TSO by TSO number? One commenter expressed concern that adopting the proposal would abolish existing TSO's.

Based on comments received, the FAA has determined that the proposed new public procedure may not have been fully understood as it was explained in Notice 79-15. The purpose of the new public procedure is to expedite the issuance of TSO's for specified articles used on civil aircraft by deleting unnecessary rulemaking steps and by deleting unnecessary material from the regulations. This effort is consistent with Executive Order 12044. There is no change in the requirements for the issuance of TSO authorizations which are relocated from Subpart A of Part 37 to new Subpart O of Part 21. There is no change in the procedure to issue TSO authorizations, to process requests for approval to deviate from any performance standard, or to request a revision to a TSO. Existing holders of TSO authorizations will continue to retain their current status when new or amended TSO's are issued, unless otherwise specified in the TSO. Manufacturers may request approval to deviate from any TSO using the same procedures as before, now described in new § 21.609.

The new public procedure does not affect the right of the public to comment on a proposed TSO. The public will continue to be invited to participate in the development of documents prepared and issued by industry organizations which the FAA will use by reference in a TSO. The FAA will use the rulemaking process to revise the sections of the Federal Aviation Regulations which reference a TSO by TSO number when there is a need to change the referenced TSO number. The FAA will make available to any interested person an index of each current TSO and each TSO the FAA anticipates will be issued within the succeeding 12 months. The FAA will also invite comments from interested persons on each proposed TSO using a notice in the *Federal Register*.

PUBLIC PROCEDURE

The following is the public procedure, in detail, the FAA will use to develop and issue final TSO's for specified articles used on civil aircraft:

- The FAA will continue to develop draft TSO's and will continue to use, by reference in the TSO, documents prepared and issued by organizations such as the Radio Technical Commission for Aeronautics (RTCA) and the Society of Automotive Engineers (SAE). Notices of RTCA meetings and invitations will continue to be published in the *Federal Register*. This will allow public participation at the early stages of document development.
- Any interested person may request the Administrator to revise or issue a new TSO by submitting a description of the revision sought or a description of the new article for which a TSO is requested.
- The FAA will use several methods to ensure that the public is afforded early opportunities to take part in the TSO decisionmaking process. A draft TSO will be circulated for public comment through the use of mailing lists. Any individual or organization can request to be placed on the TSO mailing list. All those on the list will receive drafts of each TSO. In addition, Advisory Circular 20-110, Index of Aviation Technical Standard Orders, will list those TSO's the FAA anticipates will be issued within the succeeding 12 months. Advisory Circular 20-110 will also list each current TSO and provide information on how to obtain copies of those desired. Finally, the FAA will publish periodically a notice in the *Federal Register* of each proposed TSO and provide notice of how to obtain a copy.
- Any individual or organization wishing to obtain copies of Advisory Circular 20-110, specific draft TSO's, or all such TSO's proposed by the FAA may be placed on a mailing list by submitting a request addressed to the Federal Aviation Administration, Office of Airworthiness, Aircraft Engineering Division, Systems Branch (AWS-130), 800 Independence Avenue, S.W., Washington, D.C. 20591, or by telephoning (202) 426-8395. Interested persons will receive copies of the Advisory Circular and copies of those draft TSO's requested. Any person wishing to submit comments on a proposed TSO will be given 90 days from its issuance date to submit comments.
- All comments received on or before the closing date for comments will be considered by the Administrator before issuing a final TSO.
- All comments submitted will be available, both before and after the closing date for comments, for examination by interested persons in Room 335, FAA Headquarters Building (FOB-10A), 800 Independence Avenue, S.W., Washington, D.C. 20591, between 8:30 a.m. and 5:00 p.m.
- Copies of the final TSO will be mailed to all persons on the mailing list. As in the past, documents prepared and issued by an organization that are incorporated by reference in the TSO will continue to be available to any interested person only from that organization. Final TSO's will not be published in the *Federal Register*.

- Copies of all draft and final TSO's will also be available at FAA Headquarters in the Office if Airworthiness, Aircraft Engineering Division, Systems Branch (AWS-130), and at all regional Flight Standards Engineering and Manufacturing offices.

In summary, the new procedure has numerous opportunities for the public to participate in the development of each TSO. These are: (1) participation in the development of documents prepared and issued by industry organizations, which the FAA may use by reference in a TSO; (2) mailing lists to circulate a draft TSO to the public for comment; (3) an advisory circular to list for the public each TSO the FAA anticipates will be issued within the succeeding 12 months; (4) notice in the *Federal Register* announcing the availability of each draft TSO and invitation for comment; and (5) at least 90 days to submit comments.

DISCUSSION OF GENERAL COMMENTS

One commenter recommended tightening the TSO requirements, citing three airplane incidents (the loss of a piece of tail, the loss of a wing flap, and the failure of a rear bulkhead). This amendment does not address the requirements of any individual TSO. Furthermore, TSO authorizations are not issued for the airframe parts that the commenter cited. FAA approval for these airframe parts is accomplished under the type design approval for the specific airplane.

One commenter cited TSO references in §§ 91.24(a), 91.52, and 121.360 and questioned if the FAA plans to revise these sections to delete the referenced TSO. The FAA is not revising the referenced TSO in these sections. Since Part 37 is being revoked by this amendment, references to TSO's using sections of Part 37 (§ 37.XXX) are revised to reference each TSO by the TSO number.

One commenter stated that there may be problems relating to the enforcement of the provisions of Advisory Circular 20-110 under proposed §§ 21.603(a), 21.607(a), 21.609, and 21.611. It is unclear to what this commenter is referring since the advisory circular merely lists each current TSO and each TSO the FAA anticipates will be issued within the succeeding 12 months.

DISCUSSION OF COMMENTS TO § 11.49(b)

Present § 11.49(b)(2) delegates authority to the Director, Flight Standards Service, to issue, amend, and repeal TSO's under Part 37. The notice proposed deletion of this delegation since Part 37 is being revoked. No unfavorable comments were received on the proposal. Accordingly, the proposal is adopted without change. However, it should be noted that the current FAA official responsible for TSO's is the Director of Airworthiness.

DISCUSSION OF COMMENTS TO § 21.3

Two commenters pointed out that § 21.3 contained most of the requirements of proposed § 21.617 and suggested deleting requirements in proposed § 21.617 that are duplicated in § 21.3. The FAA agrees and comments to proposed § 21.617 are discussed under § 21.3. Section 21.617 adopted by this amendment relates to a different subject than that of proposed § 21.617 which is discussed under § 21.617.

One commenter suggested revising proposed § 21.617(a) and (b) to require mechanical reliability reporting of TSO articles (currently required for Parts 121, 127, and 135 operators) for Part 91 operators or owners. The commenters cited greater user awareness of such problems for justification. Because the FAA is currently reviewing the entire mechanical reliability reporting program and the issue will be addressed at a later date, the suggestion was not adopted.

Another commenter asked if imported articles would be exempt from the reporting requirements of proposed § 21.617. Section 21.3(d)(2) does exempt foreign manufacturers from the reporting requirements of § 21.3(a) because there are existing means by which the FAA obtains the necessary information from the appropriate airworthiness authorities in the country of manufacture. As a result of the information provided by the foreign authorities, it is not necessary to apply the requirements of § 21.3(a) to foreign manufacturers.

Another commenter suggested removing the phrase "After January 3, 1971" from proposed § 21.617(a) and (b). Based on these comments and upon further consideration, the FAA has amended § 21.3(a), (b), (d), and (e)(3)(ii) to make them applicable to holders of a TSO authorization, relocated proposed § 21.617(f) to new § 21.3(f), deleted the phrase "After January 3, 1971," from § 21.3(a) and (b), and deleted proposed § 21.617.

DISCUSSION OF COMMENTS TO SUBPART O OF PART 21

No unfavorable comments were received on the proposal to amend § 21.305(b) or on proposed §§ 21.609, 21.611, 21.613, 21.615, 21.619, and 21.621. Accordingly, these proposals are adopted without substantive change.

One commenter suggested deleting § 21.305(d) and amending § 43.7 to specify that any alteration or major repair approvals granted under Part 43 be limited to the specific aircraft (by type and serial number) upon which work is performed. The commenter stated that the provisions of § 21.305(d) in conjunction with discretionary functions of § 43.7 would "administratively lead to arbitrary and capricious application of subjective standards." No proposal was made in Notice 79-15 to amend §§ 21.305(d) and 43.7 as suggested by the commenter. Furthermore, since the FAA does not have sufficient information at the present time to justify such amendments to §§ 21.305(d) and 43.7, the suggestion is not adopted.

One commenter suggested placing the TSO procedural requirements under Subpart K instead of proposed Subpart O and questioned the need for the proposed new Subpart O. Relocation of the procedural requirements of Subpart A of Part 37 in new Subpart O, as proposed, would retain the same paragraph format subdivisions which are easy to read and use. This would make the regulations easier to use for all members of the public. Therefore, these requirements are relocated in Subpart O.

One commenter suggested that TSO authorizations be transferable. The FAA does not agree. TSO authorizations are not transferable like type certificates because authorizations are issued based on the person's quality control system and ability to duplicate the article under the TSO system.

§ 21.601

No unfavorable comments were received on proposed § 21.601. However, the FAA is adopting an amendment to § 21.601 by adding paragraph 21.601(c) which states that the Administrator does not issue a TSO authorization if the manufacturing facilities for the product are located outside of the United States, unless the Administrator finds that the location places no undue burden on the FAA in administering applicable airworthiness requirements. This additional requirement is necessary to ensure that proper surveillance can be maintained over the manufacturer's facilities. The need to impose this restriction is based upon the type of surveillance necessary over a manufacturer having a TSO authorization. It is identical to the restriction placed upon manufacturing facilities to which type certificates are issued in accordance with § 21.43 and to which production certificates are issued in accordance with § 21.137 and reflects current practice. A new § 21.617 is adopted to address current practices for approving foreign-manufactured articles designed to TSO performance standards. The procedures of new § 21.617 provide an equivalent to the domestic TSO authorization.

§ 21.603

One commenter objected to proposed § 21.603(b) which continues to allow the holder of an FAA letter of acceptance of a statement of conformance, issued for an article before July 1, 1962, to continue to manufacture that article without obtaining a TSO authorization. The commenter stated that this establishes different levels of safety for the same product because it allows a product to continue to be manufactured under obsolete standards when that product could not meet current standards. Holders of such letters must comply with the requirements of §§ 21.607 through 21.615, 21.619, and 21.621. In general, when an application for TSO authorization is made, the applicable standards for the article are those in effect on the date of application. The FAA did not propose to revise § 21.603(b) to withdraw letters of acceptance issued before July 1, 1962, or any TSO authorization issued after July 1, 1962, and to require all manufacturers to demonstrate compliance with the current TSO performance standards. No unfavorable comments were received on the proposal to relocate the substance of § 37.3 to new § 21.603. Accordingly, the proposal is adopted without substantive change.

§ 21.605

One commenter recommended revising proposed § 21.605 (a)(2) to require one copy of the technical data required in the applicable TSO issued by the Administrator unless additional copies are requested by the Administrator. The FAA agrees this would reduce the number of copies of the technical data the applicant would need to submit. Another commenter suggested revising the last sentence of proposed § 21.605(a)(3) to add the phrase "or numbers (or combinations thereof)" between the words "letters" and "will." The commenter stated this would allow the use of suffix numerals as well as letters to designate minor changes to TSO articles. The FAA agrees. After further review, the FAA has determined that the use of part numbers in proposed §§ 21.605(a)(3) and 21.611(a) to identify minor design changes would simplify and expedite approval of such changes. This is consistent with Executive Order 12044 in that it lessens the regulatory burden on the public. Accordingly, § 21.605 is adopted with the noted changes.

§ 21.607

One commenter suggested deleting proposed § 21.607(d)(3) because the required weight information is not necessary as a part of the nameplate and it is provided elsewhere. The FAA agrees. Section 21.607(d)(3) is deleted and § 21.607(d) is renumbered. The same commenter recommended amending proposed § 21.607 to list the required data and information currently listed in the performance standards of each TSO to further simplify the TSO system. The FAA has determined that since the data and information listed in each TSO are not common to all TSO's, the recommendation, if adopted, would impose unnecessary requirements on some TSO authorization holders. Accordingly, proposed § 21.607 is adopted without substantive change.

Issue of Letters of TSO Design Approval: Import Appliances

New § 21.617

In order to implement the requirements contained in §§ 21.601(b)(2), 21.603(d) and 21.609(b), the FAA is adopting procedural requirements which reflect current practice for the issuance of letters of TSO design approval for import appliances (see discussion of § 21.601). New § 21.617, which is totally different in subject from proposed § 21.617 (see § 21.3), prescribes the procedural requirements and, as adopted, §§ 21.601(b)(3), 21.603(a), and 21.609(b) are revised to address foreign manufacturers. These procedural requirements reflect the current practice. Adopting this procedure causes no burden on any person and it has the benefit of formalizing the current practice. The FAA finds that notice and public procedure are unnecessary.

NOTE: This rule contains provisions for the issuance of a TSO authorization and a letter of TSO design approval. To differentiate, a TSO authorization is limited to manufacturers of articles (materials, parts, processes, or appliances) located in the United States. These manufacturers must comply with the requirement to submit quality control system data in addition to certifying that their design complies with the pertinent TSO. Conversely, a letter of TSO design approval is processed under the provisions of airworthiness bilateral agreements and is limited to appliances as defined in pertinent airworthiness bilateral agreements. Such approvals do not require submitting quality control data. The quality control integrity of these appliances is attested to by the Certificate of Airworthiness for Export issued by the civil airworthiness authority of the country of manufacture under the provisions of § 21.502.

NOTE: Any article approved under an FAA TSO authorization (domestic) or under a letter of TSO design approval (foreign) only attests to the conformity of the design and quality of the particular article against the TSO performance and quality control standards. It does not convey an installation approval. Accordingly, installation approval must be obtained in a manner acceptable to the Administrator for each particular product on which the article is to be installed. This is not a change in existing practice.

DISCUSSION OF COMMENTS TO PART 37

One commenter suggested revoking only Subpart B of Part 37. The FAA has determined that there is benefit in having all of the certification procedures for products and parts in Part 21 of the Federal Aviation Regulations. Accordingly, the proposal to revoke Part 37 is adopted without change.

NOTE: There is no change in reporting and/or recordkeeping requirements which are relocated from Subpart A of Part 37 to new Subpart O of Part 21.

ADOPTION OF THE AMENDMENTS

Accordingly, Parts 11, 21, 25, 29, 37, 91, 121, 127, and 135 of the Federal Aviation Regulations (14 CFR Parts 11, 21, 25, 29, 37, 91, 121, 127, and 135) are amended, effective September 9, 1980.

(Sections 303(d), 313(a), 601, 603, and 605, Federal Aviation Act of 1958, as amended (49 U.S.C. 1344, 1354(a), 1421, 1423, 1424, and 1425; Section 6(c), Department of Transportation Act (49 U.S.C. 1655(c)).)

NOTE: The FAA has determined that this document involves regulations which are not considered to be significant under the procedures and criteria prescribed by Executive Order 12044 and as implemented by the Department of Transportation Regulatory Policies and Procedures (44 FR 11034, February 26, 1979). A copy of the final evaluation prepared for this action is contained in the regulatory docket. A copy of it may be obtained by contacting the person identified under the caption "FOR FURTHER INFORMATION CONTACT."

Amendment 135-5

Carriage of Candidates in Federal Elections

Adopted: June 23, 1980 **Effective: July 1, 1980**

(Published in 45 FR 43160, June 26, 1980)

SUMMARY: Special Federal Aviation Regulation (SFAR) 37 allows a person who is not in the air transportation business to receive limited payment for carriage of candidates in Federal elections without the carriage being considered a commercial operation, in accordance with regulations issued by the Federal Election Commission (FEC). This amendment codifies the requirements of SFAR 37 into the Federal Aviation Regulations (FAR). Conforming amendments are made to those provisions of the FAR which concern domestic, flag, and supplemental air carriers, commercial operators, scheduled air carriers with helicopters, and air taxi operators to make it clear that those parts do not apply to the operations covered by the new regulation.

FOR FURTHER INFORMATION CONTACT:

Mr. Harold E. Smith
Regulatory Projects Branch (AVS-24)
Safety Regulations Staff
Associate Administrator for Aviation Standards
Federal Aviation Administration
800 Independence Avenue, S.W.
Washington, D.C. 20591
Telephone: (202) 755-8716

SUPPLEMENTARY INFORMATION:

BACKGROUND

SFAR 37, which became effective September 26, 1978, was issued to resolve a conflict that was created when compliance with the regulations of the FEC resulted in a violation of the FAR. Under the rules of the FEC, a candidate in a Federal election must pay for carriage in an aircraft. More specifically, the FEC rules state, in part, that when a candidate, candidate's agent, or person traveling on behalf of a candidate uses an airplane which is owned or leased by a corporation or labor organization, he or she must reimburse the aircraft operator. In the case of travel to a city served by regularly scheduled commercial service, reimbursement must be the first-class air fare. In the case of travel to a city not served by regularly scheduled commercial service, reimbursement must be the usual charter rate.

Under the FAR, an aircraft operated without compensation is operated pursuant to 14 CFR Part 91, General Operating and Flight Rules. If an operator receives compensation, he or she must have an appropriate operating certificate pursuant to Part 121, 127, or 135 of the FAR. Before FEC regulations affecting the carriage of candidates were promulgated in 1977, operators were not restricted in the carriage of candidates without compensation; however, after the FEC regulations were issued, candidates were required to make payment to operators who carried them. Instances have occurred in which individuals or corporations operating aircraft have desired to carry a candidate without charge, but the candidate would be required to compensate the operator to comply with the rules of the FEC. Receipt of payment by an aircraft operator without an appropriate operating certificate would result in a violation of the FAR. Therefore, a situation was created in which compliance with the regulations of the FEC results in a violation of the requirements of the FAR. SFAR 37 was issued to harmonize the rules of the FAA and the FEC consistent with the President's regulatory reform philosophy (Executive Order 12044).

SFAR 37 invited the public to submit their views to the FAA for inclusion in the rules docket. Sixty-three comments have been received, the vast majority of which were submitted by air taxi and commercial operators. A letter from the FEC commends the FAA for making it easier for pilots, aircraft owners, and Federal candidates to comply with FEC regulations and those of the FAA by eliminating a point of conflict between the regulations of the two agencies. One commenter states that it would be in the public interest to incorporate the SFAR into the regulations to relieve the restriction and make FAA rules consistent with FEC rules.

The commenters' principal objection to SFAR 37 is that the rule encourages unsafe operations since it does not impose the certification requirements applicable to commercial operators.

As stated previously, an operation for compensation generally requires an appropriate operating certificate. However, the carriage of candidates by an aircraft operator not in the air transportation business for a limited form of payment is not considered a commercial operation. The mere fact that payment is received by the operator because it is compelled by the FEC's rules does not mean that the operator should be regulated like an air carrier or commercial operator. Payment is sharply limited by the FEC, the recovery generally not even meeting expenses incurred for the flight. In addition, the operators affected by these amendments are a limited group, and their carriage of candidates is conducted on an infrequent basis for only short periods of time every few years. These operators are no different from anyone else flying under the general operating rules of the FAR because they are not engaged in the business of carrying passengers.

An adequate level of safety will be maintained because all operations conducted under these amendments will be governed by the provisions of FAR Part 91. This Part governs the majority of aircraft operations conducted by U.S.-registered aircraft, and all operations conducted within the United States. Part 91 adequately provides for the safety of aircraft operations by requiring that aircraft be maintained and operated in a safe manner. It provides, for example, that no person may operate an aircraft unless it has had an annual inspection and has been maintained in an airworthy condition between inspections. In the case of large and turbine-powered (turbojet and turboprop) multiengine airplanes, the owner and operator must follow one of five detailed programs for the inspection of that airplane. From an operationsl standpoint, Part 91 prescribes standards in the following areas, among others: use of seat belts; fuel requirements for flight both under VFR and in IFR conditions; transponder and altitude reporting equipment and use; and supplemental oxygen requirements. In addition, the provisions of FAR Part 61, Certification: Pilots and Flight Instructors, require each crewmember to maintain currency and by fully qualified for the type of operation to be conducted. Part 61 contains, among other things, proficiency check requirements and recent flight experience requirements for pilots in command, as well as qualification requirements for persons serving as second in command. Accordingly, the FAA does not agree that these amendments, which allow the carriage of candidates for payment to be conducted under Part 91, will encourage unsafe operations.

Another group of commenters states that SFAR 37 promotes unfair competition since air taxi and commercial operators, unlike their counterparts who operate under the SFAR, must bear a considerable expense in complying with FAA-imposed regulations under Part 135. The FAA does not agree with this view. The carriage of candidates in Federal elections is infrequent and the operator who is involved in such carriage does not intend to engage in the business of being an air carrier or commercial operator. These operators are accepting payment only because FEC rules require them to do so. They are not flying for profit but instead are receiving a limited form of compensation which in virtually all cases would not cover the total direct and indirect expenses of the flight. These operators are not holding themselves out to the public for business, but are rather involved in private arrangements with candidates with whom they are oftentimes well acquainted on a personal level. It must be emphasized that an operator carrying political candidates in accordance with this regulation would be required to comply with Part 121, 127, or 135 of the FAR in more than the minimal compensation required by the FEC regulations is received.

Another objection to the SFAR is that it was implemented without proper notice and solicitation of comment. However, adequate legal justification was set forth in the SFAR for proceeding without notice. A finding of good cause was made for dispensing with notice and public procedure, and this finding was in compliance with the requirements of the Administrative Procedure Act. The FAA, in accordance with Department of Transportation policy, solicited post-issuance comments which have been considered.

Several commenters point out that operators under SFAR 37 would suffer serious repercussions in the event of an accident because of insurance problems, as most policies for the operation of business and pleasure aircraft do not cover flights for hire. Insurance coverage is a private matter which every Part 91 operator must consider, and with which the FAA does not generally concern itself. It should be noted, however, that operators who are affected by this amendment are usually knowledgeable corporations which have their aircraft insurance program reviewed by competent underwriters. Insurance coverage can be arranged to accommodate these infrequent operations in the same manner as it is arranged for operations under Subpart D of Part 91 where a limited form of compensation is allowed.

DESCRIPTION OF THE AMENDMENTS

Part 91 is amended to provide that an aircraft operator, other than one operating an aircraft under the rules of Part 121, 127, or 135, may receive payment for the carriage of a candidate in a Federal election, an agent of the candidate, or a person traveling on behalf of the candidate while operating under the rules of that Part. The operator's primary business may not be that of an air carrier or commercial operator, the carriage must be conducted under the rules of Part 91, and the payment for the carriage must be required by regulations of the FEC. Parts 121, 127, and 135 are amended to make it clear that they do not apply to the operations described in this new Part 91 regulation.

NEED FOR IMMEDIATE ADOPTION

Due to the imminent Federal election campaigns of 1980, I find that the reasons which justified the adoption of SFAR 37 still exist. Since these amendments continue the provisions of a currently operative SFAR and impose no additional burden on any person, I find that notice and public procedure are impracticable and contrary to the public interest and that good cause exists for making them effective in less than 30 days.

THE AMENDMENTS

Accordingly, the Federal Aviation Administration amends Parts 91, 121, 127, and 135 of the Federal Aviation Regulations effective July 1, 1980.

(Secs. 313(a), 601, and 604 of the Federal Aviation Act of 1958, as amended (49 U.S.C. 1354(a), 1421, and 1424); Sec. 6(c) of the Department of Transportation Act (49 U.S.C. 1655(c)).)

NOTE—The FAA has determined that this document involves a regulation which is not significant under Executive Order 12044, as implemented by Department of Transportation Regulatory Policies and Procedures (44 FR 11034; February 26, 1979). In addition, the FAA has determined that the expected impact of the regulation is so minimal that it does not require an evaluation.

Amendment 135-6
Redelegation of Authority

Adopted: July 8, 1980 **Effective: September 10, 1980**

(Published in 45 FR 47837, July 17, 1980)

SUMMARY: These amendments redelegate authority formerly held by the Director, Flight Standards Service, to the Director of Airworthiness or the Director of Flight Operations, as appropriate. These amendments are necessary because of a reorganization within FAA Headquarters.

FOR FURTHER INFORMATION CONTACT: Mr. Eli Newberger, Regulatory Projects Branch (AVS-24), Safety Regulations Staff, Associate Administrator for Aviation Standards, Federal Aviation Administration, 800 Independence Avenue, S.W., Washington, D.C. 20591; Telephone (202) 755-8716.

SUPPLEMENTARY INFORMATION: In 1979 Flight Standards Service was reorganized under the Associate Administrator for Aviation Standards. Flight Standards Service was abolished and the Offices of Airworthiness, Flight Operations, and Aviation Safety were established. References to the Director, Flight Standards Service, contained in the Federal Aviation Regulations need to be redelegated to the appropriate new office. In addition, since § 11.49(b)(2) was deleted by Amendment 11-18 (45 FR 38342), § 11.49(b)(3) is designated § 11.49(b)(2).

NOTICE AND PUBLIC PROCEDURE

Since these amendments are editorial and administrative in nature and impose no burden on the public, I find that notice and public procedure are unnecessary.

THE AMENDMENTS

Accordingly, Parts 11, 91, 121, 135, and 137 of the Federal Aviation Regulations (14 CFR Parts 11, 91, 121, 135, 137) are amended, effective September 10, 1980.

[Sections 313(a), 314(a), 601 through 610, and 1102 of the Federal Aviation Act of 1958 (49 U.S.C. 1354(a), 1421 through 1430, and 1502); Sec. 6(c), Department of Transportation Act (49 U.S.C. 1655(c)).]

NOTE—The Federal Aviation Administration has determined that this document involves a regulation that is not significnat under Executive Order 12044, as Implemented by the Department of Transportation Regulatory Policies and Procedures (44 FR 11034; February 26, 1979). In addition, since these documents are editorial in nature and impose no additional burden on any person, the Federal Aviation Administration has determined that there will be no economic impact and thus no evaluation is required.

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Amendment 135-7

Establishment of New Part 125

Prescribing Certification and Operation Rules for Certain Large Airplanes

Adopted: October 2, 1980 **Effective: February 1, 1981**

(Published in 45 FR 67214, October 9, 1980)

SUMMARY: These amendments establish a uniform set of certification and operation rules for large airplanes having a seating capacity of 20 or more passengers or a maximum payload capacity of 6,000 pounds or more when used for any purpose other than common carriage. These rules substantially upgrade the level of safety applicable to large airplanes formerly operated under Part 91, which provides basic general operating and flight rules for all operations. The number and types of accidents involving large airplanes operating under Part 91 demonstrate the need for this upgrading. Moreover, because the applicability of these rules does not depend upon a compensation or hire test, they enhance the FAA's capability to ensure that many more members of the public are afforded a higher level of safety. This rule is the final step in a regulatory upgrade and modernization program that has become essential with the continued deregulation of air transportation.

FOR FURTHER INFORMATION CONTACT: Harold E. Smith, Regulatory Projects Branch (AVS-24), Safety Regulations Staff, Associate Administrator for Aviation Standards, 800 Independence Avenue, SW., Washington, D.C. 20591, Telephone (202) 755-8716.

SUPPLEMENTARY INFORMATION:

Notice of Proposed Rule Making

These amendments are based on Notice of Proposed Rule Making 79-19 (44 FR 66324; November 19, 1979). All interested persons have been given an opportunity to participate in the making of these amendments and due consideration has been given to all matters presented. Except for the changes discussed below, these amendments and the reasons for their adoption are the same as those stated in Notice 79-19.

Background of This Rulemaking Proceeding

This rule culminates an extended effort by the FAA to upgrade and standardize the regulations applicable to certain large airplanes used in noncommon (private) carrier commercial operations (carriage other than common carriage is private carriage). In 1970, the Secretary of Transportation directed the Assistant Secretary for Safety and Consumer Affairs, Office of the Secretary of Transportation, to conduct an indepth study of charter operations utilizing large airplanes. Notice 79-19 summarizes the recommendations made as a result of that study. In short, the study recommended that new regulations be developed for large airplanes, pressurized airplanes, and turbine-powered airplanes engaged in noncommon carriage. Emphasis was placed on achieving a standard appropriate to the operation of transport category airplanes, including requirements for crew proficiency, operations, and airworthiness, that would provide a level of safety which compares favorably with Part 121. The study also recommended the establishment of a new part of the Federal Aviation Regulations (FAR) which would apply a single set of regulations to large airplanes used for various purposes, including those used for compensation or hire but excluding common carriage which would continue to be regulated under Part 121. One important feature of those recommendations was that "FAA field inspectors would no longer be required to make an economic determination of what constitutes operation 'for compensation or hire.'" The antique nature of the "compensation or hire" test is illustrated by the fact that it originated with the regulation of ground transportation under the Interstate Commerce Act which was enacted in the late 1800's. The test is presently contained in the definition of a "commercial operator" in the FAR and is essentially the same as the definition adopted in 1949 by the Civil Aeronautics Board. Section 1.1 defines "commercial operator" as "a person who, for compensation or hire, engages in the carriage by aircraft in air commerce of persons or property, other than as an air carrier. . . ." Where it is doubtful whether the operations are "for compensation or hire," the test has been "whether the carriage by air is merely incidental to the person's other business or is, of itself, a major enterprise for profit."

The FAA partially implemented the recommendations of the 1970 Department of Transportation Task Force in 1972 with the adoption of new Subpart D of Part 91, which was the initial step in upgrading the level of safety applicable to large airplanes.

Since 1972 the FAA has carefully monitored the operating experience of large airplanes engaged in noncommon carriage operations. There are a number of significant aspects to this operating experience. First, and perhaps the key aspect, is the fact that the economic test of "compensation or hire" has proved to be a nebulous guide to both the FAA and the aviation community in attempting to determine whether the operations fall within Subpart D of Part 91 or under the commercial operator regulations of Part 121. The agency found that many sham arrangements have been developed by some operators to mask de facto commercial operations so that they can be conducted under Part 91. Despite the FAA's efforts to detect these illegal operations, frequently it is only after an accident or incident that sufficient facts are available to unmask the illegal operator. Once the unfortunate event occurs, the violator is subject to enforcement action. It would be far better, however, for the accident or incident to have been prevented. The difficulties in application of the "compensation or hire" test are not limited to the unscrupulous operator. There have been instances in which a lessee of a large airplane has assumed responsibility unwittingly for its operation without recognizing the obligations. Many operators who desire to comply with the applicable regulations have, in good faith, experienced confusion over whether they are entitled to operate under Part 91 or whether they are required to obtain a commercial operator certificate. Many interpretations have been sought and issued, which require substantial time and effort on the part of the public and FAA personnel.

Another aspect of the experience involving U.S.-registered large airplanes, ostensibly operating under Subpart D, is the significant number of accidents which have occurred. Post-accident investigations indicate a wide range of deficiencies, including defective engines, failure of the crew to hold proper certificates, improper flight planning, improper operating technique, and failure to ascertain weight and balance limitations. This rule should preclude the occurrence of many of these types of accidents. The following table lists some of the accidents involving large airplanes operating under Part 91 which occurred in the period 1972–1979. This table was developed from National Transportation Safety Board data.

* * * * *

Further, the Task Force's recommendation to establish a single set of regulations applicable to large airplanes in noncommon carriage operations is validated by changes in operational concepts which occurred subsequent to the Airline Deregulation Act of 1978. That Act substantially relaxes the statutory economic restrictions on air carrier certification and route authority which existed for many years. It encourages competition in the marketplace. One result is that there is now incentive for persons such as commercial operators to enter common carriage operations as air carriers. FAA records show that four commercial operators of large airplanes have become air carriers since the October 1978 effective date of that Act.

Air travel clubs operate large, airline-type airplanes and, as a group, they have experienced significant changes in the short period of time between the issuance ofoNotice 79–19 and the issuance of this final rule. There were 11 air travel clubs in November 1979 and on May 20, 1980, there were only 7. This reduction implies that the need for air travel clubs, as traditionally constituted, is diminishing in today's environment. The FAA's regulatory program, as revised by Part 125, provides meaningful alternatives for travel clubs. They may seek common carrier certification under Part 121, or, if they do not wish to become common carriers, they may operate under Part 125 which does not restrict the charges which may be made. Current Part 123 defines an "air travel club" as "a person who engages in the carriage by airplanes of persons who are required to qualify for that carriage by payment of an assessment, dues, membership fee, or other similar type of remittance." This limitation on compensation, of course, does not apply under Part 125. This is a substantial benefit to travel clubs. One travel club requests a short-term exemption to permit it to operate in the manner contemplated by Part 125 until the Part becomes effective. That club also states that if Part 125 is not adopted, it intends to seek CAB authority to operate as a supplemental carrier.

Similar revenue opportunities exist under Part 125 for corporate transport and aircraft lease and aviation service operators.

Role of Part 125 in FAA Enforcement Program

Part 125 is an integral part of the FAA's stepped-up enforcement program designed to reduce accidents and enhance compliance with the FAR. Part 125 is aimed primarily at operators who use subterfuges to avoid compliance with appropriate regulations. Part 125 will make it easier to detect these operators and take appropriate enforcement action. It also should serve to deter persons from attempting to evade the regulations because the risk of detection is increased. Other parts of this enforcement program include:

- Numerous large civil penalties collected from large air carriers, commuter/air taxi operators, and manufacturers in 1979.
- Proposed legislation to raise the maximum civil penalty for each FAR violation from $1,000 to $25,000 and to authorize the FAA to seek criminal penalties in flagrant cases.
- Issuance of a new enforcement handbook, which consolidates all enforcement material into one source and contains many new provisions for guidance of FAA personnel.
- Agreement with the Department of Justice on a method to speed up processing of enforcement actions in the courts.
- Development of a computer-based system which will give agency personnel prompt access to an airman's or an operator's compliance record.

* * * * *

PART 135

§ *135.1* Applicability.

Section 135.1 is revised to be consistent with the amendments to §§ 121.1, 121.53, and the applicability of Part 125. Part 135 will continue to apply to commercial operators operating aircraft with a maximum seating capacity of less than 20 passengers or a maximum payload capacity of less than 6,000 pounds. In addition, since Part 125 does not apply to any common carriage operation, persons conducting common carriage solely between points entirely within any state of the United States in aircraft having a maximum passenger seating capacity of 30 seats or less and a maximum payload capacity of 7,500 pounds or less will continue to be governed by the rules of Part 135. Appropriate clarifying changes are made in § 135.1 to accomplish the above results and to make it consistent with § 121.9 and SFAR 38.

ADOPTION OF THE AMENDMENTS

Accordingly, the Federal Aviation Regulations (14 CFR Chapter I) are amended, effective February 1, 1981, by establishing a new Part 125 under Subchapter G and by amending § 135.1(a)(3) of Part 135.

(Secs. 313, 601 through 610, and 1102, Federal Aviation Act of 1958, as amended (49 U.S.C. 1354, 1421-1430 and 1502); sec. 6(c), Department of Transportation Act (49 U.S.C. 1655(c)).)

Note—The FAA has determined that this document involves a regulation which is significant under Executive Order 12044, as implemented by DOT Regulatory Policies and Procedures (44 FR 11034; February 26, 1979). A copy of the final regulatory evaluation prepared for this action is contained in the regulatory docket. A copy of it may be obtained by contacting the person identified under the caption "For Further Information Contact."

NOTE: The complete preamble to Amendment 135-7 is contained in new Part 125.

Amendment 135-8

Operation of Foreign-Registered Aircraft

Adopted: October 13, 1980 **Effective: October 16, 1980**

(Published in 45 FR 68646, October 16, 1980)

SUMMARY: These amendments allow U.S. air carriers to operate foreign-registered aircraft, subject to certain conditions and limitations, in foreign air transportation and between points within the United States. They implement the "International Air Transportation Competition Act of 1979" (Pub.L. 96-192) which, among other things, amended section 1108(b) of the Federal Aviation Act of 1958 to allow U.S. air carriers to engage in otherwise authorized common carriage and carriage of mail with foreign-registered aircraft under lease or charter to them without crew. These amendments make available to U.S. air carriers, including air taxi and commuter air carriers, a new source for aircraft and for equipment financing and will assist those carriers in achieving increased operational efficiency.

FOR FURTHER INFORMATION CONTACT: Mr. Eli S. Newberger, Regulatory Projects Branch (AVS-24), Safety Regulations Staff, Associate Administrator for Aviation Standards, Federal Aviation Administration, 800 Independence Avenue, SW., Washington, D.C. 20591; telephone: (202) 755-8716.

SUPPLEMENTARY INFORMATION:

History

This final rule is based on Notice of Proposed Rule Making No. 80-8, published in the *Federal Register* on May 1, 1980 (45 FR 29064). All interested persons have been given an opportunity to participate in the making of the rule and due consideration has been given to all matters presented.

Background

Notice 80-8 was issued to provide the basis for implementation of an important amendment to section 1108(b) of the Federal Aviation Act of 1958 (49 U.S.C. 1508(b)) (the FA Act) contained in the International Air Transportation Competition Act of 1979" (Pub. L. 96-192) which became effective February 15, 1980. That amendment to the third sentence of section 1108(b) permitted the Administrator to issue regulations "authorizing United States air carriers to engage in otherwise authorized common carriage and carriage of mail with foreign-registered aircraft under lease or charter to them without crew." Prior to the amendment, section 1108(b) of the FA Act prohibited foreign-registered aircraft from taking on, at any point within the United States, persons, property, or mail carried for compensation or hire and destined for another point within the United States. The statutory amendment is important because it provides the basis for availability to United States air carriers of a new source of aircraft which may be utilized under a wide variety of circumstances. This point will be discussed further under the heading "Benefits".

Notice 80-8 proposed changes to §§ 121.153, 127.71, and 135.25 of the Federal Aviation Regulations (FAR) to implement the statutory amendment. One aspect of the Notice was the deletion from §§ 121.153 and 135.25 of prohibitions on the use of any aircraft not registered as a civil aircraft of the United States. In addition to implementing section 1108(b) as it existed prior to February 15, 1980, those prohibitions also prohibited carriage by U.S. carriers in other than U.S.-registered aircraft between a point in the United States and a point outside the United States, and between points outside the United States. Although Part 127 did not contain an explicit prohibition on the use of foreign-registered aircraft, the effect of section 1108(b) of the FA Act prior to February 15, 1980, was to prohibit use of those aircraft in air commerce within the United States. The second aspect of the Notice was the addition to §§ 121.153, 127.71, and 135.25 of provisions permitting a Part 121, 127, or 135 certificate holder to operate in common carriage, and for the carriage of mail, a civil aircraft which is leased or chartered to the certificate holder without crew and is registered in a country which is a party to the Convention on International Civil Aviation (Chicago Convention). Four basic requirements were proposed as conditions precedent to the operation of a foreign-registered aircraft as follows:

(1) The aircraft must carry an appropriate airworthiness certificate issued by the country of registration and must meet the registration and identification requirements of that country.

(2) The aircraft must comply with all the requirements of the Federal Aviation Regulations which would be applicable if the aircraft were U.S.-registered instead of foreign-registered.

(3) The certificate holder must file a copy of the lease or charter agreement with the FAA.

(4) The aircraft must be operated by airmen employed by the certificate holder.

Discussion of Comments

The FAA received 11 comments in response to Notice 80-8. These comments represent the views of individuals, labor organizations, foreign governments, airline organizations, and other government agencies. Six commenters highly favor the proposal, four submitted comments and recommendations, and one opposes the proposal.

The commenter opposing the proposal contends that the leasing of these aircraft erodes the U.S. work force by allowing the foreign lessor to maintain the aircraft. The FAA does not agree. The rule permits an air carrier to use a foreign-registered aircraft. The maintenance, preventive maintenance, and inspection requirements for the foreign-registered aircraft are the same as those required for a U.S.-registered aircraft. The U.S. air carrier must conduct the operation and maintenance of the foreign-registered aircraft in accordance with its currently approved FAA operations specifications. This commenter is also concerned that there will be a deterioration in the safety level. This concern is not justified. The foreign-registered aircraft will be of a design approved by the FAA, and will be manufactured, maintained, and operated under the same standards as a U.S.-registered aircraft. Finally, this commenter requested that the rule making be deferred and a public hearing be held. The FAA does not agree that this is necessary. These amendments require a level of safety which is equivalent to that required for U.S.-registered aircraft. The commenter has not made any showing justifying delay of these amendments or why a public hearing should be held.

Several commenters are concerned about the accomplishment of airworthiness directives, service bulletins, service letters, service difficulty reporting, maintenance schedules, maintenance procedures, mechanic certification, and the overall airworthiness of an aircraft that was maintained by a foreign operator. The FAA requires air carriers to show compliance with the operating and airworthiness rules before issuing operations specifications authorizing the aircraft's operation. These amendments require the certificate holder to maintain the foreign-registered aircraft to standards equivalent to those for U.S.-registered aircraft. Therefore, there will not be any significant difference between the airworthiness of a foreign-registered aircraft and a U.S.-registered aircraft operated by a U.S. air carrier.

One commenter states it is unclear why it may be necessary for a pilot to obtain a foreign airman certificate. If imposed by the country of registry, this requirement would parallel the U.S. regulation that requires a foreign airman operating a U.S.-registered aircraft to hold a current U.S. pilot certificate when operating the U.S.-registered aircraft. This requirement conforms with the obligation imposed on the country of registry by the Chicago Convention.

One commenter states the FAA should make a predetermination that the minimum airworthiness requirements of the foreign country of registry meet the minimum U.S. airworthiness requirements. The FAA does not agree that this is necessary or advisable. It is the air carrier's responsibility to provide to the FAA the documentation and records necessary to determine type certification conformity. The FAA will then make the necessary inspections and/or reviews needed to determine the aircraft's compliance status prior to authorizing the aircraft's use in U.S. air carrier operations. In some cases, the operator may be required to make alterations or obtain exemptions from state of registry requirements in order to operate the aircraft in U.S. air carrier operations.

One commenter proposes a change to allow the certificate holder to contract for airmen as well as the aircraft as long as they are under the exclusive direction and control of the lessee certificate holder. The FAA does not agree. This suggested change would allow wet lease agreements which are contrary to the provision in the statute which limits this rule making to a lease or charter agreement without crew.

Several foreign airworthiness authorities commented on the various rules, conditions, and limitations contained in their respective regulations concerning the operation and airworthiness of aircraft registered and maintained in their respective states. Their concern is whether the country of registry or the FAA is responsible for surveillance of the aircraft. Since the aircraft is treated as a U.S.-registered aircraft in all respects, while being operated by a U.S. air carrier, the FAA will conduct such surveillance as necessary to ensure compliance with the FAR no matter where the aircraft is operated. The certificate holder is responsible for making arrangements with the country of registry to satisfy that country's requirements, including any special documentation required by that country to be carried on the aircraft. It may be necessary for the lessee or lessor to obtain exemptions or concessions from the foreign airworthiness authority who has jurisdiction over the registration of the aircraft. In any case, the FAA will require documentation or conduct physical inspections to ensure compliance with all applicable requirements in the FAR.

One commenter suggests the FAR should provide for the FAA to accept alternate procedures to those laid down in the FAR if the FAA finds that the procedures of the country of registry provide an equivalent level of safety. It is inappropriate to include such provisions in a general rule making of this nature. Findings of equivalency, if appropriate, are best left for determination in specific cases. The FAA encourages parties to consult with the FAA with a view toward an exemption if there is an appropriate set of circumstances that seem to lend themselves to an exemption.

Another commenter cites a number of hypothetical difficulties that could arise as a result of these leases. The FAA contemplates that any difficulties encountered are best addressed by consultation between the governments involved in specific cases and are inappropriate for resolution in a general rule. The FAA notes that just such a procedure was followed in the case of the Concorde interchange between Braniff and British Airways/Air France.

One commenter questions why the aircraft must meet U.S. type certificate requirements. One of the requirements in the present regulations for air carriers is that an aircraft must have a current airworthiness certificate issued under Chapter 1 of 14 CFR. In order to have a current U.S. airworthiness certificate, the aircraft must comply with

U.S. type certificate requirements. This standard is maintained in this rule to ensure that the aircraft is of a design approved by the FAA.

One commenter is concerned as to who can perform maintenance when the aircraft is operated by the certificate holder for a lease or charter operation. The FAA requires that maintenance must be performed by another U.S. certificate holder and those authorized by Parts 43 and 145 of the FAR.

Overall, the FAA recognizes that it has maintained a purposefully high safety standard; however, at the same time the FAA recognizes that we are dealing with cases of first impression. The FAA welcomes the opportunity to deal with individual proposals on a case-by-case basis with a view toward seeing that the Congressional intent is fully carried out.

Benefits

The new law and these amendments enhance the ability of the industry to increase aircraft utilization and to obtain aircraft financing from other than U.S. sources. It should open up a previously virtually untapped source of aircraft equipment for the broad spectrum of air carriers ranging from the very large trunk carrier to the smallest commuter or air taxi air carrier. For example, aircraft purchased by foreign owners from U.S. manufacturers can be leased to U.S. carriers for relatively long periods of time. As another example, a U.S. air carrier could lease a foreign-registered aircraft during its peak season and return the aircraft for the foreign air carrier's peak season. As still another example, the statute and these rules should encourage and facilitate interchange lease arrangements in which an authorized foreign air carrier would operate an aircraft to an interchange point at which the U.S. air carrier would take operational control for operation over its routes. Commuter air carriers should find this amendment especially beneficial in obtaining aircraft for use in providing essential air service to small communities.

Description of the Amendments

To implement Pub.L. 96-192, §§ 121.153, 127.71, and 135.25 of the FAR are amended to allow a U.S. air carrier to operate, in common carriage and for the carriage of mail, a civil aircraft which is leased or chartered to it without crew and is registered in a foreign country which is a party to the Chicago Convention. There are four specific requirements which must be met under each of the sections specified above.

First, the aircraft is required to carry an appropriate airworthiness certificate issued by the country of registration and meet the registration and identification requirements of that country. This is necessary to comply with the Chicago Convention.

Second, the aircraft is required to comply with all the requirements in the FAR that would be applicable if the aircraft were registered in the United States. This includes all the requirements which must be met for the issuance of a U.S. standard airworthiness certificate, although a U.S. standard airworthiness certificate will not be issued for the aircraft. The foreign-registered aircraft and its operation must comply in all respects with the FAR as if it were a U.S.-registered aircraft operated by the air carrier. This ensures that there is no reduction in the level of safety currently provided by U.S. air carriers. The aircraft type design must be approved under a U.S. type certificate and the particular aircraft involved must meet the requirements for a U.S. standard airworthiness certificate, except the requirement for a U.S. registration certificate. With respect to the aircraft being approved under a U.S. type certificate, the proposal has been editorially revised in this final rule by the addition of the clause "is of a type design which is approved under a U.S. type certificate" immediately following the second word "aircraft" in §§ 121.153(c)(2), 127.71(b)(2), and 135.25(d)(2). This change uses more technically correct language and is not a substantive difference from the discussion of the proposal which said that the aircraft type design must be type certificated by the FAA. This means the aircraft must conform to the FAA type certificate and be in a condition for safe operation, including compliance with all effective U.S. and foreign airworthiness directives, maintenance and life-limited parts requirements. Certification and maintenance rules, operating and equipment rules, and pilot certification, qualification, checking, training, and competency rules applicable to the operation of a U.S.-registered aircraft of the same type also would apply. However, the foreign-registered aircraft is not eligible for, nor would it receive, a U.S. standard airworthiness certificate or be registered in the United States. In addition to the requirement to hold a U.S. airman certificate, it may be necessary for the airman to hold an appropriate foreign airman certificate.

It is implicit in the amendments to §§ 121.153, 127.71, and 135.25 that the foreign-registered aircraft must comply with the noise and engine emissions provisions of the FAR to the same extent that a U.S.-registered aircraft is required to comply for the operations conducted. For example, compliance must be shown with the requirements of the "new production" (§ 36.1(d)) and "acoustical change" (§ 36.7) rules and the operating noise limits rule in Subpart E of Part 91 as if the aircraft were (or would be) certificated and registered in the United States. Thus, a U.S. air carrier operating a foreign-registered aircraft must include that aircraft in the compliance plan/status report submitted to the FAA under § 91.308. In addition, if the FAA adopts or amends any other noise or engine emissions requirements applicable to U.S.-registered aircraft, those requirements would apply to foreign-registered aircraft operated by U.S. air carriers under any rules adopted as a result of this rule.

Third, to enable the FAA to have a listing of all foreign-registered aircraft operated by U.S. air carriers, the certificate holder must file a copy of the lease or charter agreement with the FAA Aircraft Registry at Oklahoma City.

Finally, these amendments provide that the aircraft must be operated by airmen employed by the certificate holder. This is consistent with the requirement in Pub.L. 96-192 that the lease or charter be without crew.

Immediate Adoption

Since these amendments are needed to implement a statute, and are relaxatory, I find that good cause exists for making them effective in less than 30 days.

Adoption of the Amendments

Accordingly, Parts 121, 127, and 135 of the Federal Aviation Regulations (14 CFR Parts 121, 127, and 135) are amended, effective October 16, 1980.

(Sections 313(a), 601, 603, 604, 610(b), 611, and 1108(b), Federal Aviation Act of 1958 (49 U.S.C. §§ 1354(a), 1421, 1423, 1424, 1430(b), 1431, and 1508(b)); Section 6(c), Department of Transportation Act (49 U.S.C. § 1655(c)))

Note—The FAA has determined that this document involves a regulation which is not considered to be significant under Executive Order 12044 as implemented by the Department of Transportation Regulatory Policies and Procedures (44 FR 11034, February 26, 1979). A copy of the final evaluation prepared for this action is contained in the regulatory docket. A copy of it may be obtained by writing to the individual listed above as the information contact.

Amendment 135-9

Commuter Pilot-In-Command Operating Experience Requirements and Extension of Compliance Date for Instrument Rating Requirement

Adopted: November 28, 1980 **Effective: December 1, 1980**

(Published in 45 FR 80460 December 4, 1980)

SUMMARY: This amendment clarifies the commuter pilot-in-command operating experience which became effective on March 1, 1980. The intent is to require commuter pilots to meet certain operating experience requirements in the make and basic model aircraft to be flown during commuter passenger-carrying operations prior to being designated as pilot-in-command. It became apparent, during its implementation, that clarification of the rule is necessary to ensure that the required operating experience is acquired. This amendment also extends the compliance date for the instrument rating requirements for pilots in command of aircraft operating under Part 135 to give the agency adequate time to consider alternatives and determine a course of action.

Comments must be received on or before January 5, 1981.

FOR FURTHER INFORMATION CONTACT: Mr. H. E. Smith, Regulatory Projects Branch (AVS-24), Safety Regulations Staff, Associate Administrator for Aviation Standards, Federal Aviation Administration, 800 Independence Avenue, S.W., Washington, D.C. 20591; telephone (202) 755-8716.

ADDRESS: Comments on this amendment may be mailed in duplicate to: Federal Aviation Administration, Office of the Chief Counsel, Attn.: Rules Docket (AGC-204), Docket No. 21134, 800 Independence Avenue, S.W., Washington, D.C. 20591; or be delivered in duplicate to Room 916, 800 Independence Ave., S.W., Washington, D.C. 20591. All comments must be marked "Docket No. 21134." Comments may be inspected in the Rules Docket weekdays, except Federal holidays, between 8:30 a.m. and 5:00 p.m.

SUPPLEMENTARY INFORMATION:

Background

Operating Experience for Commuter Pilots in Command

On January 30, 1980, the FAA issued Amendment 135-3, which contains commuter pilot-in-commmand operating experience requirements. These changes were necessary to upgrade pilot experience to provide a higher level of safety for commuter operations. During the implementation of these changes, which affect all passenger-carrying commuter operators, it became evident that a clarification of certain requirements is necessary.

The preamble for Amendment 135-3 cites the need for a pilot-in-command to obtain operating experience in commuter passenger-carrying operations while being observed by a check airman. This is similar to the Part 121 pilot-in-command operating experience requirement. The intent was to upgrade safety standards and to make passenger-carrying commuter operating experience as consistent as possible with that required by Part 121 as mandated by the Airline Deregulation Act of 1978.

Section 135.244, Operating experience, contains the increased pilot-in-command qualifications for commuter operations. Section 135.244(b)(2) states that the experience must be acquired during operations "under this Part." The intent of this requirement is to require pilots to acquire operating experience under the supervision of a check airman during commuter passenger-carrying operations prior to designation as pilot in command. However, some certificate holders interpret the phrase "under this Part" to mean that the operating experience may be flown under commuter and/or on-demand passenger or cargo air taxi operations.

Since the purpose of the commuter operating experience requirement is to give the pilot-in-command pilot time in the aircraft under operational conditions peculiar to commuter operations, it was not the intent to allow for experience accrued during charter or on-demand operations because of the differences in those types of operations from scheduled operations. For example, in contrast with scheduled commuter operations over predetermined routes, charter operations are not normally conducted in accordance with a schedule or established route schedules and do not require the great number of takeoffs, instrument approaches, and landings normally associated with scheduled operations. Another example is the greater exposure to adverse weather experienced in scheduled operations because of the increased frequency of flights as opposed to infrequent charter flights.

Since many of the functions of a commuter operation, such as scheduling, flight planning, weight and balance, passenger and cargo loading, and fueling are not performed by the pilots, their ability to assess these functions in the commuter operating environment is critical. This makes it necessary for a prospective pilot in command to obtain the experience in passenger-carrying commuter operations. These examples clearly show the increased safety level by having the pilot meet the commuter passenger pilot-in-command experience requirement in commuter-type operations.

The acquisition of operating experience in commuter passenger-carrying operations only is imperative. With the growth of commuter air carriers, an ever-increasing number of aircraft that can carry a higher number of passengers are being introduced into service. Many of the pilots being designated to be pilots in command on these operations have very little experience in the make and basic model of aircraft. It is important that these pilots be well acquainted with the aircraft, its operating procedures, and its limitations before acting as pilot in command. The operating experience requirement provides this exposure.

This experience, similar to that required in Part 121, provides the pilot experience flying the line with an experienced check airman on board to supervise the operation prior to the pilot being designated as a pilot in command. Such experience can only be adequately acquired on scheduled passenger operations. It provides familiarization with the aircraft in these circumstances, which includes operations at maximum gross weights and during critical performance conditions, which are important areas that need attention in accident prevention. Familiarization with the aircraft systems, operating limitations, performance characteristics and other pertinent procedures are ensured by the check airmen. When the pilot is designated as a pilot-in-command after the operating experience requirements are met, that pilot is better prepared to assume these duties.

To accomplish the necessary clarifying change, the phrase "operations under this Part" in § 135.244(b)(2) is amended to read "commuter passenger-carrying operations under this Part."

Section 135.244(a) requires that the pilot acquire the operating experience in each make and model aircraft to be flown by the pilot as a pilot in command in commuter passenger-carrying operations. The intent of make and model aircraft in this section is to permit the pilot to acquire the necessary experience in any make and basic model of the aircraft involved. For instance, all series models of Piper PA-31, Cessna 310, Beech 99, or DeHavilland DHC-6 aircraft can be flown to meet the operating experience in that particular make and model aircraft. Clarification of this requirement is necessary because it is interpreted by some to mean that the operating experience in that make and model is limited to one specific model, that is, a Cessna 310A. To accomplish this clarifying change, the words "basic model" are substituted for the word "model" whenever it appears in § 135.244(a).

In regard to cost factors, some operators will incur higher costs as a result of obtaining this operating experience only during commuter passenger-carrying operations. However, relaxation of the requirement to permit this experience to be obtained in the basic model of each make and model of aircraft results in a substantial cost reduction but with no derogation in safety.

The operating experience requirement needs to be met only one time for another particular make and basic model aircraft. It can be transferred by the pilot to another certificate holder provided satisfactory documentation is provided to the new certificate holder and the experience is obtained in the same make and basic model aircraft.

Compliance Date for Instrument Rating Requirements

On October 10, 1978, Part 135 was revised under the Regulatory Review Program. This revision became effective on December 1, 1978. The requirement for all pilots in command to hold an instrument rating was to be effective no later than June 1, 1979. Numerous petitions were received by the FAA requesting exemption from the instrument rating requirement. As a result, the FAA determined that additional rulemaking regarding that requirement should be initiated before compliance with the instrument rating became mandatory. In response, Amendment 135-1, effective May 7, 1979, changed the compliance date in § 135.10 for the instrument rating requirement to December 1, 1980.

Additional studies and rulemaking actions are being conducted at the present time. These studies disclose that additional limited exceptions to the pilot-in-command instrument rating requirement may be appropriate. To provide adequate time to determine a course of action, the FAA is issuing this amendment to extend the compliance date for the instrument rating to February 1, 1981.

NEED FOR IMMEDIATE ADOPTION

When § 135.244 was issued, there was an urgent need to effect the amendment as soon as possible. At that time, notice and public procedure were determined to be impracticable and contrary to public interest. Since clarification of that rule is necessary, the same need for immediate adoption is present. The purpose of § 135.244 is to upgrade commuter pilot competency and to require operating experience to be acquired during commuter passenger-carrying operations. The acquisition of this experience in other types of operations is not adequate. Section 135.10 has a compliance date of December 1, 1980, for all pilots in command to hold an instrument rating in Part 135 operations. Studies are in progress at this time to determine the feasibility of limited exceptions and will not be completed by December 1, 1980. By extending the compliance date to February 1, 1981, the FAA will have sufficient time to determine a course of action. Therefore, I find that notice and public procedure are impracticable and contrary to the public interest and good cause exists for making the amendments to §§ 135.244 and 135.10 effective in less than 30 days.

However, interested persons are invited to submit such comments as they may desire regarding this amendment. Communications should identify the docket number and be submitted in duplicate to the address specified above. All communications received on or before the closing date for comments will be considered by the Administrator, and this amendment may be changed in light of the comments received. All comments received will be available, both before and after the closing date for comments, in the Rules Docket for examination by interested persons. Commenters wishing the FAA to acknowledge receipt of their comments submitted in response to this invitation to comment must submit with those comments a self-addressed, stamped postcard on which the following statement is made: "Comments to Docket Number 21134.". The postcard will be date/time stamped and returned to the commenter.

ADOPTION OF THE AMENDMENT

Accordingly, Part 135 of the Federal Aviation Regulations (14 CFR Part 135) is amended effective December 1, 1980.

[Secs. 313(a) and 601 through 605 of the Federal Aviation Act of 1958 (49 U.S.C. 1354(a), 1421 through 1425); Sec. 6(c), Department of Transportation Act (49 U.S.C. 1655(c).]

NOTE: The FAA has determined that this document involves regulations which are not considered to be significant under the procedures and criteria prescribed by Executive Order 12044 as implemented by Department of Transportation Policies and Regulatory Procedures (44 FR 11034; February 26, 1979). In addition, the FAA has determined that the expected impact of these regulations is so minimal that an evaluation is not required.

This is a final order of the Administrator as defined by Section 1005 of the Federal Aviation Act of 1958, as amended (49 U.S.C. 1485). As such, it is subject to review only by the courts of appeals of the United States or the United States Court of Appeals for the District of Columbia.

Amendment 135-10

Airplane and Airport Operator Security

Adopted: January 12, 1981 **Effective: September 11, 1981**

(Published in 46 FR 3782, January 15, 1981)

SUMMARY: These amendments revise and consolidate security regulations for scheduled passenger and public charter operations in a new Part of the Federal Aviation Regulations and extend those regulations to certain commuter and air taxi operations and small airplane operations conducted by U.S. and foreign air carriers. The consolidation facilitates public access to aviation security regulations. These changes provide an appropriate response to the current threat of criminal violence and air piracy against scheduled and public charter operations of U.S. air carriers, intrastate operators, and foreign air carriers.

FOR FURTHER INFORMATION CONTACT:

Mr. H. E. Smith, Regulatory Projects Branch (AVS-24)
Safety Regulations Staff
Associate Administrator for Aviation Standards
Federal Aviation Administration
800 Independence Avenue, S.W.
Washington, D.C. 20591; Telephone (202) 755-8716.

SUPPLEMENTARY INFORMATION:

On November 1, 1979, the FAA published Notice of Proposed Rule Making No. 79-17 (44 FR 63048), to extend the FAA security regulations applicable to scheduled passenger and public charter operations of U.S. and foreign air carriers and U.S. intrastate operators to certain air taxi operators and small airplane operations conducted by U.S. and foreign operators. It also proposed to simplify these regulations and consolidate them (for U.S. certificate holders) into a new Part of the Federal Aviation Regulations to facilitate public access to security regulations.

All interested persons have been given an opportunity to participate in the making of this new Part 108 and the revisions to Parts 107, 121, 129, and 135. Due consideration has been given to all matters presented. In response to comments received and after further study by the FAA, a number of changes are reflected in the rule as adopted.

Background

Since their inception in 1972, FAA security regulations have been designed to meet threats of hijacking and other crimes against the specific kinds of aircraft operations that have proven to be most attractive to the potential hijacker or saboteur. For the most part these operations have involved large transport type airplanes with scheduled departure times, and generally have been conducted by air carriers under Certificates of Public Convenience and Necessity (CPCN) and other limited economic authority issued by the Civil Aeronautics Board (CAB), as well as by certain wholly intrastate operators who are not air carriers. Operating rules for these operators are set out in Part 121 (14 CFR Part 121) and, for this reason, FAA security regulations were initially placed in that Part.

Scheduled operations with large airplanes also have been conducted under § 135.2 of Part 135 (14 CFR Part 135). Security for these operations has been achieved through voluntary compliance with requirements similar to those in Part 121; however, the number of these operations is increasing.

Recently, and in particular since the passage of the Airline Deregulation Act of 1978 (Deregulation Act), the CAB has liberalized its policies and has granted broad authority to conduct scheduled operations with large aircraft. There now are numerous air carriers referred to in the Deregulation Act as "commuters" operating under Part 135 with authority to conduct operations similar to those that were previously conducted only by CPCN holders under Part 121. While CPCN holders are being allowed to discontinue service at different terminals, commuter air carriers are gaining these terminal and route authorizations. As a result, commuter air carriers are now using identical aircraft in scheduled and public charter operations formerly used only by CPCN holders. These airplanes are being operated over routes formerly served by CPCN holders, and the operations are conducted without being subject to full FAA security requirements.

The Deregulation Act carries with it a mandate that there be no diminution in safety in situations where commuter carriers provide substitute service on routes previously served by route carriers. Section 33(c) (3) of the Deregulation Act requires the FAA to "impose requirements upon such commuter air carriers to assure that the level of safety provided to persons traveling on such commuter air carriers is, to the maximum feasible extent, equivalent to the level of safety provided to persons traveling on air carriers which provide service pursuant to certificates issued under Section 401 of this title."

The Proposal

To ensure consistent application of FAA's security rules and to achieve the necessary level of security, Notice 79-17 proposed security requirements based upon airplane complexity instead of CAB authorizations. The proposal called for multilevel security requirements to be equally applicable to all scheduled and public charter passenger operations conducted by air carriers and other FAA certificate holders. The FAA certificate holder would have been required to meet the full security requirements that have been set out in Part 121, including an approved screening system, for operations conducted in airplanes with a seating configuration of 20 or more passenger seats. For operations conducted in airplanes configured for less than 20 passenger seats, the certificate holder would have been subject only to minimal security requirements, including passenger and shipper identification, airplane security, and arrangements for law enforcement response when needed. The proposal also would have retained the existing requirement in Part 135 for crewmember antihijack training.

A number of changes have been made in the final rules, as discussed in this preamble. A table is provided for comparing the major provisions of the proposed rule and the final amendments. It is to assist in understanding the changes that have been made and should not be relied upon as a complete statement of the amendments.

Passenger Seating Configuration	Security Requirements
	NOTICE OF PROPOSED RULE MAKING
1-19	Modified airplane and airport operator security program would have been adopted and implemented
more than 19	Full airplane and airport operator security program would have been adopted and implemented, including screening of all passengers and law enforcement presence.
	FINAL AMENDMENTS
1-30	No security program is required unless passengers have uncontrolled access to a sterile area and then a screening system and law enforcement presence must be provided for those passengers.
31-60	Airplane and airport operator security program must be adopted, but screening and law enforcement presence must be implemented only when the FAA identifies a security threat or passengers have uncontrolled access to a sterile area.
more than 60	Full security program must be adopted and implemented, including screening of all passengers, law enforcement presence, and other significant safeguards.

Comments

Approximately 320 public comments were received in response to Notice 79-17. Nearly all of the commenters were against the proposal. The major objections were the cost of implementing the security requirements and the absence of any threat that justified extending screening and other security requirements to commuter operations. The commenters argued that the proposal would place an undue hardship on small communities and inhibit industry growth by causing commuters to avoid use of larger airplanes in order to gain advantage of the minimal security requirements for airplanes with less than 20 passenger seats.

Economic Study

In analyzing financial data provided by the commenters, the security costs per passenger enplanement were found to vary so much that the FAA decided that further economic study was necessary. A sample of typical airports was examined to determine what the actual costs would be to implement the proposed requirements. The results of this small sampling indicated that a comprehensive indepth cost study was needed.

This indepth study identified potentially affected airplane operators (25) and airports (20). The personnel of FAA regional security divisions completed structured interview forms for each potentially affected airline station (90) and for each airport. This information was collected and analyzed by the FAA's Office of Aviation Policy and Plans; and in many cases followup discussions were held with airline and airport personnel. The final regulatory evaluation that resulted from this study is available in the public docket for this rulemaking action.

The study indicates that the FAA estimated costs provided in Notice 79-17 are generally accurate when considered against the total projected enplanements. However, when viewed for a particular airport, or for a particular flight, costs might be unreasonably high because of the limited enplanements at that airport or for that flight.

Considerable reduction in the cost impact of this final rule has been effected through the changes in the proposal. While adoption of Notice 79-17 could have resulted in an estimated maximum annual operating cost of $8.80 million and maximum capital investments of $5.30 million (for airplane operators) and $.36 million (for airports), the maximum annual operating cost for the final rule will not exceed $3.15 million and no capital investment will be necessary. These changes and their economic impact are discussed below.

Security Threat

The increased security threat to the commuter industry that was expected to result from implementation of the Deregulation Act has not materialized. Only one attempted hijacking of a commuter-operated airplane has occurred since the Deregulation Act was implemented. This attempt was thwarted by skillful FBI negotiations resulting in apprehension of the hijacker.

While the threat of air piracy and sabotage exists for all levels of air transportation, the historical record clearly establishes that the threat is very serious for some levels and less serious for others. Although all sizes of aircraft have been subjected to hijackings, the most severe threat has been against the larger, longer-range, jet airplanes in scheduled passenger operations. Typically these airplanes have more than 60 passenger seats, the smallest being the BAC-111, which may be configured for as few as 65 passenger seats, and the more commonly used DC-9, which is typically configured for approximately 90 passenger seats. The number of U.S. hijackings of such airplanes has continued to rise in relation to worldwide hijackings and, over the past 3 years, the U.S. air transportation system has experienced 40 hijackings of these air carrier airplanes.

Final Rule

Considering the economic burden that could be imposed on the small airport and airplane operators and the fact that the hijacking threat directed against commuters has not significantly increased, it is not appropriate to fully implement the proposed rule changes at this time. This final rule requires implementing a full security program only for scheduled and public charter operations with airplanes having a passenger seating configuration of more than 60 seats and for operations providing deplaned passengers access to a sterile area at the next landing when the access is not controlled by another airplane operator's security program.

For operations with airplanes having a passenger seating configuration of more than 30 but less than 61 seats, a full security program need not be implemented. A full program for these operations will have to be implemented only if the FAA notifies the airplane operator that a security threat exists with respect to a particular operation or set of operations.

While the frequency and extent of these threats cannot be predicted, the FAA expects that this contingency seldom will be invoked. If it is, it will probably not involve all airplane operators or all points served by a single operator, nor would all precautions have to be taken in every contingency.

Antihijack security training will continue to be required for all crewmembers of FAA certificate holders operating under Part 121 or Part 135. In addition, throughout Part 108 and the changes to Part 107 and § 129.25 of this chapter, the term "airplane" instead of "aircraft" is used since threatened operations have only involved airplanes and no other aircraft.

Airplane Operator Security Requirements

None of the comments suggest, nor does FAA intend, lessening in any way the current security requirements for U.S. or foreign air carriers utilizing airplanes configured for more than 60 passenger seats or for U.S. airports presently served by these carriers on a regular basis. To ensure that passengers in scheduled or public charter operations with these airplanes benefit from a degree of security commensurate with the existing threat, the rule, as adopted, continues to require the implementation of a full security program for these operations.

For airplanes with a passenger seating configuration of less than 61 seats, the larger the airplane, the more attractive it can be expected to be for the potential hijacker. The great majority of airplanes currently used by commuters are of less than 31 seat configuration. However, a number of larger airplanes are now in production or "on the drawing board" to serve the commuter airline market. The larger airplanes have a greater stage length and fuel capacity and carry many more passengers than those in current use. As a result, potential hijackers are more apt to see them as containing more hostages and having the range to serve their purposes.

Additionally, the FAA's economic study generally reflects significant increases in security costs per passenger as the airplane capacity decreases. The study indicates that for the lower half of the spectrum (the 1- through 30-seat airplanes), the economic hardship far outweighs the security benefit derived from even the minimal security requirements proposed in Notice 79-17 for airplanes configured for less than 20 seats.

For these reasons, the FAA has determined that airplanes with a seating configuration of 31 through 60 should be treated differently from those with 30 or fewer seats. Part 108, as adopted, requires FAA certificate holders conducting scheduled passenger and public charter operations in 31- through 60-seat airplanes to continue to conduct security training for crews, as presently required by §§ 121.417 and 135.331. Further Part 108 and changes to Part 129 require the adoption of a comprehensive security program for operations with 31 through 60 seats comparable to that required for operations with airplanes having more than 60 seats. However, the operator will normally only have to implement for 31- through 60-seat airplanes those portions of the program that call for (1) having procedures for contacting the law enforcement agency identified by the airport operator and arranging for response to an incident when needed; and (2) advising appropriate employees, including crewmembers, of the procedures and instructing them when and how to use them. If the operator also uses airplanes above 60 seats, a full security program must be implemented for these operations.

Each operator of 31- through 60-seat airplanes must be prepared to implement its full security program for all or part of its operations at a particular station or systemwide upon notification by the FAA that a threat exists. Such a threat would exist, for example, where operations in this category have been subjected to hijacking and a specific threat has been made that more hijackings will be perpetrated. Such a threat might also exist where information has been received or developed concerning airplanes in this category without a prior hijacking.

FAA certificate holders utilizing airplanes with a seating configuration of 1 through 30 seats, under the provisions of this rule, are only required to conduct antihijack crew training currently required by § 135.331. Because of the size, range, and public perception of the capacity and capability of these airplanes, this reactive security measure is considered adequate to meet the level of threat against this type operation.

Law Enforcement Support

When a U.S. or foreign air carrier is required to implement a security screening system at an airport governed by Part 107, the airport operator is required to provide law enforcement support for that screening. When a carrier conducts operations from an airport not governed by Part 107 of this chapter and is required to use a screening system, the carrier continues to be required to provide law enforcement officers to support the screening system.

Access to Sterile Areas

To protect the security of sterile areas, this amendment provides that operators of airplanes of any seating configuration may not discharge scheduled or public charter passengers into a sterile area unless: (1) the passengers and their accessible items are properly screened by the airplane operator; or (2) their access is controlled through surveillance and escort procedures or through the screening procedures of another operator.

Thus, unscreened passengers may have access to a sterile area where the discharging operator has made a prior arrangement with another FAA certificate holder or foreign air carrier, or in some cases the airport operator, having responsibility for the sterile area either for escort of the deplaning passengers into, through, and out of the sterile area or for the screening of those passengers before entry. Without these arrangements, operators not otherwise required by Part 108 or 129 to screen their passengers who wish to deplane their passengers in a particular operation into a sterile area at a particular airport must adopt and implement all the provisions of an appropriate security program with respect to that passenger operation. This requires that: (1) 100 percent screening of the passengers and their accessible items be completed before the last departure; (2) the airplane be protected; and (3) procedures be used to prevent or deter the introduction of explosives and incendiaries into checked baggage and cargo for those flights.

This process currently is being followed by a number of air carriers operating under § 135.2. These air taxi and commuter operators, because of their desire to allow their passengers to have direct and uncontrolled access to a sterile area, have voluntarily elected to amend their operations specifications to adhere to the security requirements of § 121.538. With implementation of Part 108, this will no longer be necessary, and operators requiring direct uncontrolled access to sterile areas for their passengers will follow the security program procedures in § 108.25.

As a result of these amendments, certain FAA certificate holders that operate smaller airplanes and have been required to meet the security provisions of § 121.538 are no longer required to implement full security programs. Under § 108.5 these operators or other operators utilizing 1- through 60-seat airplanes may elect to continue to operate under a full security program in order to discharge passengers into a sterile area, or may elect to operate under a full or modified security program to meet passenger expectations, to fulfill company security policies, or for other reasons. However, when FAA approval is obtained for any security program, § 108.5 requires that the airplane operator carry out the provisions of that program. Operators utilizing smaller airplanes who use their own separate facilities at certain airports will now be able, at those airports, to operate without screening passengers or providing law enforcement presence. For these operators this rule may represent a considerable economic savings.

An Air Carrier Standard Security Program meeting the requirements of this rule is available for use by all certificate holders. This program, jointly developed by FAA and industry, has proven very effective in lessening the certificate holder's administrative burden. The FAA encourages adoption of the Air Carrier Standard Security Program to ensure uniform implementation and use of security procedures.

Airport Security Requirements

At U.S. airports regularly serving scheduled passenger operations of FAA certificate holders and foreign air carriers utilizing airplanes with more than 60 seats, this final rule requires the airport operator to adhere to the current provisions of Part 107.

At those airports regularly serving scheduled passenger operations utilizing 31-through 60-passenger-seat airplanes and at which the airplane operator is not required to screen its passengers, the airport operator must only identify the law enforcement agency that will respond to the airplane operator's request for assistance. Responsibility for establishing and implementing the actual arrangements and for obtaining assistance in the case of an incident rests with the airplane operator.

For these operations, the airport operator is required to submit to the FAA for approval a security program that identifies: (1) the law enforcement support available to respond upon request of the airport operator; (2) a description of the procedure to be used by the air carrier to summon support; (3) a description of the training the law enforcement officers have received; and (4) a description of the system of records of law enforcement actions taken in support of aviation security as called for by § 107.23.

If an airplane operator using airplanes with less than 61 passenger seats must adopt and carry out a full security program with a screening system, the airport operator must provide law enforcement support during all required passenger screening operations. The airport operator is required to submit to the FAA for approval a security program identifying the law enforcement support, the training received by law enforcement officers, and a description of the system for recording law enforcement actions taken in support of aviation security. These law enforcement support requirements are the only security requirements imposed on the airport operator for operations with airplanes configured for less than 61 passenger seats where screening is performed under a required security program.

Economic Evaluation

Assessment of the economic impact of these amendments indicates that certain airplane and airport operators not previously required to have a security program may incur some costs in connection with scheduled and public charter passenger operations with airplanes having a passenger seating configuration of 31 through 60 passenger seats. Some additional costs will occur for these operators if they must implement contingency procedures included in security programs because of a threat condition. Most, if not all, of the costs of meeting contingencies would be associated with personnel and would not involve investments in X-ray machines, metal detectors, and alterations to airport terminals as might have been the case if the proposal in Notice 79-17 had been adopted. If a threat situation occurs, the FAA will work closely with the affected parties to ensure adequate, efficient, and cost-effective implementation of contingency procedures.

The only other new cost resulting from this rule may occur when some operators of airplanes with less than 61 passenger seats desire to discharge passengers directly into a sterile area. No additional cost will occur to the many operators already voluntarily providing security for these operations through amendments to their operations specifications. Airplane operators that do not now provide this security, and who desire access to a sterile area, will incur new costs for providing the necessary security safeguards.

The economic assessment indicates that the final rule may have an impact on 11 Part 135 operators of airplanes seating 31 through 60 passengers at as many as 39 stations. Virtually all of this cost impact would occur if contingency procedures are implemented. Based on the FAA's analysis of the current threat, coupled with the historical record, airplane and airport operators will rarely, if ever, be required to take these heightened precautions and a threat necessitating such action would probably never involve all 11 carriers or 39 stations at a time.

However, in the unlikely event that all operators of 31- through 60-seat airplanes are required to implement contingency procedures at all stations for an entire year because of the greatest hijacking threat, the annual cost could be as high as $3.15 million. Whatever costs occur may be recovered through fare or temporary subsidy increases.

This $3.15 million maximum cost contrasts with the possible costs that would have resulted from the proposed rule. The FAA's evaluation indicates that it could have resulted in as much as $8.8 million in new annual operating costs for the affected airplane operators, $5.3 million in investments for security equipment and construction by airplane operators and $360,000 in airport improvements.

Because these amendments impose uniform security requirements on the basis of airplane size and the protection of sterile areas instead of the kind of FAA and CAB operating authority, some Part 121 operators will have an opportunity to reduce security costs at some stations. As is the current case, all Part 135 operators now screening voluntarily under an operations specifications amendment can elect to discontinue screening under this rule if they choose not to continue to have access to a sterile area. While the FAA cannot determine the exact amount of cost savings, it estimates the maximum possible annual operating cost savings of $13,720,526.

ADOPTION OF THE AMENDMENT

Accordingly Parts 107, 121, 129, and 135 are amended and new Part 108 is added as follows, effective April 1, 1981, or 60 days after a notice of approval of the recordkeeping and reporting requirements of new Part 108 by the Office of Management and Budget is published in the *Federal Register*, whichever is later.

(Secs. 313, 315, 316, 317, 601–610 of the Federal Aviation Act of 1958 (49 U.S.C. 1354(a), 1356, 1357, 1358, 1421–1430); Sec. 6(c), Department of Transportation Act (49 U.S.C. 1655(c)).)

This rule is a final order of the Administrator as defined by Section 1005 of the Federal Aviation Act of 1958, as amended (49 U.S.C. 1485). As such, it is subject to review only by the courts of appeals of the United States or the United States Court of Appeals for the District of Columbia.

NOTE: The FAA has determined that this document involves a proposed regulation which is not significant under Executive Order 12044 as implemented by DOT Regulatory Policies and Procedures (44 FR 11034; February 26, 1979). A copy of the regulatory evaluation prepared for this action is contained in the regulatory docket. A copy of it may be obtained by contacting the person identified under the caption "FOR FURTHER INFORMATION CONTACT".

Reference Amendment 135-10

Airplane and Airport Operator Security

Adopted: June 15, 1981 **Effective: September 11, 1981**

(Published in 46 FR 36053, July 13, 1981)

SUMMARY: This document prescribes the effective date for a new Part of the Federal Aviation Regulations that consolidates security regulations for scheduled passenger and public charter operations and extends those regulations to certain commuter and air taxi operations and small airplane operations conducted by U.S. and foreign air carriers. At the time this new Part was adopted, its reporting and recordkeeping requirements had not been approved by OMB, and the Part could not be made effective. That approval process has now been completed.

This document also corrects a reference in the words of issuance of Amendment 107-1.

FOR FURTHER INFORMATION CONTACT:

Joseph A. Sirkis, Regulatory Projects Branch (AVS-24)
Safety Regulations Staff
Associate Administrator for Aviation Standards
Federal Aviation Administration
800 Independence Avenue, S.W.
Washington, D.C. 20591; Telephone (202) 755-8716.

SUPPLEMENTARY INFORMATION:

On January 12, 1981, the FAA adopted amendments that added a new Part 108, Airplane Operator Security (46 FR 3782; January 15, 1981), and amended other associated security regulations. The new Part revises and consolidates aviation security regulations for scheduled passenger and public charter operations, and extends those regulations to certain commuter and air taxi operations and small airplane operations conducted by U.S. and foreign air carriers. The consolidation facilitates public access to aviation security regulations. The changes provide an appropriate response to the current threat of criminal violence and air piracy against scheduled and public charter operations of U.S. air carriers, intrastate operators, and foreign air carriers.

Because new Part 108 contains reporting and recordkeeping requirements for which OMB approval is required, the effectivity of the new Part was delayed until April 1, 1981, or 60 days after OMB approval, whichever would be later. On April 29, 1981, OMB approved these requirements. A copy of the approval may be examined at the Federal Aviation Administration, Office of the Chief Counsel, Rules Docket, No. 19726, 800 Independence Avenue, SW, Washington, DC 20591.

Accordingly, this notice prescribes the necessary effective date and, except as noted, provides the 60-day notice referred to at the time these amendments were adopted.

In order to relieve certain airplane operators immediately of an unnecessary financial burden, this notice permits compliance without delay with new Part 108. When issuing Part 108, the FAA considered the economic burden that could be imposed on the small airplane operators and the fact that the hijacking threat directed against commuters has not significantly increased. It was determined that the implementation of a full security program should only be required for scheduled and public charter operations with airplanes having a passenger-seating configuration of more than 60 seats and for operations providing deplaned passengers access to a sterile area at the next landing when the access is not controlled by another airplane operator's security program. Accordingly, Part 108 provides that for operations with airplanes having a passenger-seating configuration of more than 30 but fewer than 61 seats a full security program need not be implemented.

For Part 108 to be effective immediately for any operator, the operator need only advise the Director of Civil Aviation Security of its intention to comply with the Part.

Correction

In connection with new Part 108, the airport operator security rules in Part 107 were also amended (Amendment 107-1) to relate the airport operator's responsibilities, including law enforcement support, to the level of security required for airplane operators using the airport.

Section 107.7 requires the airport operator to notify the FAA, and appropriately amend its security program, whenever certain changed security conditions occur. Specifically, § 107.7(a)(4) provides that this action must be taken when the law enforcement support, as described in the airport operator's security program, is not adequate to comply with § 107.15. Amendment 107-1 was intended to add references in § 107.7(a)(4) to new security program requirements. However, because that provision is misnumbered in the current bound version of the Code of Federal Regulations (14 CFR 107.7), the amending language erroneously referred to it as § 107.7(a)(3). This amendment corrects the amending language to refer to § 107.7(a)(4). The Code of Federal Regulations will be corrected when it is next published in bound form.

EFFECTIVE DATE AND CORRECTION

Accordingly, Amendments No. 107-1, 108 (New), 121-167, 129-11, and 135-10 will be effective September 11, 1981, or, for a certificate holder to which new Part 108 would apply, on the date that the certificate holder notifies the Director of Civil Aviation Security of its intention to comply with the Part, whichever date is earlier. The words of issuance of Amendment 107-1 are corrected to amend § 107.7(a)(4), instead of § 107.7(a)(3), by inserting the phrase ", (f)(1), or (g)(1)" after the phrase "§ 107.3(b)(7)".

(Secs. 313, 315, 316, 317, 601-610 of the Federal Aviation Act of 1958 (49 U.S.C. 1354(a), 1356, 1357, 1358, 1421-1430); Sec. 6(c) of the Department of Transportation Act (49 U.S.C. 1655(c)).)

NOTE: The FAA has determined that this document pertains to a rulemaking action which is not a major regulation under Executive Order 12291; that it is not significant under Department of Transportation Regulatory Policies and Procedures (44 FR 11034; February 26, 1979); and that, under the criteria of the Regulatory Flexibility Act, it will not have a significant impact on a substantial number of small entities. In addition, the FAA has determined that, while a regulatory evaluation was prepared for the final rule, the expected further impact of this notice and correction is so minimal that it does not require an evaluation.

Amendment 135-11

Elimination of Duties and Activities of Flight Crewmembers Not Required for the Safe Operation of Aircraft

Adopted: January 14, 1981 **Effective: May 18, 1981**

(Published in 46 FR 5500, January 19, 1981)

SUMMARY: These amendments prohibit performance of nonessential duties and activities by flight crewmembers which are not required for the safe operation of aircraft during critical phases of flight. Nonessential flight crewmember duties and activities can create distractions in the flight crew compartment. These amendments require aircraft operators and flight crewmembers to assure an environment in the flight crew compartment that is free from such potentially dangerous distractions.

FOR FURTHER INFORMATION CONTACT:

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SUPPLEMENTARY INFORMATION:

HISTORY

This final rule is based on Notice of Proposed Rule Making No. 80-12 published in the Federal Register on August 28, 1980, (45 FR 57684). All interested persons have been given an opportunity to participate in the making of the rule, and due consideration has been given to all matters presented.

BACKGROUND

Notice 80-12 was issued as a result of the FAA's growing awareness that certain activities and nonessential duties assigned to flight crewmembers by the air carrier are not required for the safe operation of aircraft. These nonessential duties and activities are possible sources of dangerous distraction to flight crewmembers and can result in a compromise of safety, especially during critical phases of flight. A review of data derived from the Federal Aviation Administration/National Aeronautics and Space Administration (NASA), Aviation Safety Reporting System (ASRS), revealed many examples of flight crew errors, omissions, and noncompliance with air traffic control (ATC) clearances which reportedly resulted from distractions caused by the performance of nonessential duties and activities by flight crewmembers. A review of National Transportation Safety Board (NTSB) accident investigation reports further revealed that inadequate cockpit discipline in the flight crew compartment is a commonly cited cause of aviation accidents.

Notice 80-12 proposed adding new §§ 121.542 and 135.100 to the Federal Aviation Regulations (FAR) to eliminate nonsafety related duties and activities during critical phases of flight, thereby greatly reducing accident potential. Critical phases of flight were defined in the notice as all ground operations involving taxi, takeoff and landing, and other flight operations except cruise flight.

DISCUSSION OF COMMENTS

Eighteen comments were received in response to Notice 80-12, representing the views of individuals, labor organizations, trade associations, airline companies, and other government agencies. The NTSB in its comment expressed unqualified approval of the proposals, as did one citizen's committee which responded to the notice. A majority of commenters expressed approval of the intent of the proposals. Several, however, suggested changes which would tailor the proposals to specific airline operations. Where practicable, these suggestions have been adopted.

Several commenters object that the definition of critical phases of flight as everything but cruise flight is too stringent, particularly for short-haul up and down operations where there is a minimum, if any, cruise portion of flight. They state that a sterile cockpit until cruise is simply not workable in the instance of these shorter flights and suggest that a hard altitude be specified instead. The FAA agrees. The definition of critical phases of flight is expanded in the flight operations area to allow nonessential duties and activities to be conducted during cruise flight at any altitude, and during climbout and descent above 10,000 feet.

One commenter specifically questions the practicality of prohibiting all extraneous conversation between a pilot and passengers on board small carrier aircraft operating under Part 135 of the FAR. The FAA does not agree. The objective of the rule is to reduce distractions in the cockpit. Extraneous conversation in the cockpit during critical phases of flight causes flight crew distraction in small as well as large aircraft. Therefore, Part 135 operators carrying passengers in the same compartment occupied by flight crewmembers should ensure that those passengers are briefed concerning their responsibilities under the law. The FAA considers extraneous conversation, as it pertains to this rule, to be a dialogue not related to the safe operation of an aircraft, such as discussions concerning politics or the passing scenery.

A number of commenters object to the proposals as being ambiguous and lacking definition. They state that the proposals would place both operators and flight personnel in an untenable interpretation dilemma since the list of duties and activities prohibited in the proposals is noninclusive. These commenters suggest that the FAA not issue open-ended rules such as the ones proposed, but rather leave determinations as to which specific duties and activities are unnecessary for the safe operation of aircraft and when they are to be prohibited to the individual operators involved. They suggest that each operator submit a cockpit sterilization procedure to the FAA for approval by the Administrator. The FAA does not agree that the proposals are in any way ambiguous or vague. The rules are clear; they categorically state that airlines shall not require their flight crewmembers to perform nonsafety related duties during critical phases of flight and that flight crewmembers shall not conduct nonsafety related activities which could cause distractions in the flight crew compartment during critical phases of flight. They further state that the pilot-in-command shall not permit any activity during a critical phase of flight which would distract flight crewmembers from the performance of their duties. Critical phases of flight is an expression which is commonly used in discussions concerning flight crew workloads. These are the phases of a flight in which the flight crew is busiest, such as during takeoff and landing and instrument approaches. When many complex tasks are performed in a short time interval, distracting events could cause errors and significant reductions in the quality of work performed. The performance of a nonsafety related duty or activity when flight crew workload is heavy could be the critical event which precludes a flight crewmember from performing an essential function such as extending the landing gear prior to touchdown.

Several of these commenters further state that the proposals would be too difficult to enforce. They suggest that the intent of the proposals to achieve a sterile cockpit during critical phases of flight could best be furthered by having each operator determine which duties and activities should be prohibited and incorporate them into its training program. The FAA does not agree that the rule is too difficult to enforce. Principal operation inspectors will assure air carrier compliance through review of manuals and procedures. Individual compliance will be assured through en route surveillance, as in the past. Violations of this rule will be pursued as vigorously as those of any other FAR. The FAA does not object to individual operators incorporating additional examples of nonessential duties and activities into their manuals and training programs, however the minimum provisions of these rules must be met.

Several commenters state their belief that individual airline sterile cockpit procedures already in existence have worked well, and that therefore the proposals are not necessary. They state that the adoption of sterile cockpit procedures on a voluntary basis is the most desirable alternative to the proposals in Notice 80-12. The FAA does not agree. A background history of events leading to the formulation of the proposals, including attempts by the FAA to promote voluntary compliance with practices which would prevent cockpit distractions during critical phases of flight, was given in Notice 80-12. Efforts by the FAA to encourage periods of voluntary cockpit sterilization have not been totally successful as evidenced by hundreds of recent ASRS reports detailing incidents of distractions in the flightcrew compartment, and by the continued occurrence of aircraft accidents such as the September 1978 PSA mid-air collision near San Diego in which such unnecessary activities as crewmembers engaging in extraneous conversation have been found to play a part.

Several commenters question the need for the proposed rules given the existence of Federal Aviation Regulations which concern flight safety and cockpit management. They point to regulations which vest the pilot-in-command with full control and responsibility as to the operation of an aircraft, and which prohibit persons from operating an aircraft in a careless or reckless manner. The existence of these regulations alone is insufficient. None of the current Federal Aviation Regulations specifically prohibits performance of nonsafety related duties and activities during critical phases of flight. The need for such a rule is made clear in Notice 80-12 where the Eastern Airlines crash in Charlotte, North Carolina, and the PSA collision near San Diego are discussed as examples of accidents in which a breakdown of cockpit discipline played a part.

One commenter questions the use of ASRS data to support the proposal. He inquires into the type and amount of data reviewed and whether the data was randomly picked. The FAA reviewed 475 ASRS examples of distractions in the cockpit. The period of review spanned from July 1976, when the ASRS program was first conceived, to March 1980. The following table lists the categories stored in the computer and the number of reports in each category for which distraction was judged to be the reason for the reported error:

Categories Reviewed	*Number of Distractions*
Altitude Alert	209
Alerts and Warnings	16
False Alarms	20
Ground Proximity Warning System	39
Cockpit Display	60
Aircraft Equipment Malfunction	91
Checklist	40
	475

ASRS reports of distractions in categories involving paperwork problems, public address systems, flight attendants, company radios, and extraneous conversations were also reviewed. A given ASRS report reviewed by the FAA may have spoken to a combination of the above categories.

This commenter objects to use of the NTSB report on the PSA midair collision in San Diego in support of the proposal, since the Air Line Pilots Association (ALPA) has petitioned the NTSB to reconsider the probable cause of that collision. The FAA does not agree that reference to the NTSB report was in any way inappropriate. ALPA's June 9, 1980, petition for reconsideration of the probable cause of the San Diego crash does not challenge the NTSB's statements concerning the extraneous conversation taking place in the PSA cockpit preceding the collision. In this regard, the NTSB in its accident report stated: "Although the conversation was not causal, it does point out the dangers inherent in this type of cockpit environment during descent and approach to landing." The FAA is in agreement with the NTSB's assessment of the dangers associated with extraneous conversation. The fact that ALPA has petitioned the NTSB has no bearing on these rules.

This commenter states further that if additional cockpit management regulations are needed, they should be dealt with in Part 91 of the regulations which are applicable to all pilots and not just to air carriers and air taxi operators. The FAA does not agree. The amendments apply to Parts 121 and 135 in order to assure the highest level of safety possible for those engaging in air transportation. Applying the same amendments to Part 91 would be impractical and unnecessary because of the many different types of operations conducted under that Part and because Part 91 operations do not involve the traveling public.

One commenter who is in favor of the proposal suggests that the definition of critical phases of flight should not include taxi since accidents during taxi are extremely rare. The FAA does not agree. Serious accidents during taxi have occurred, several of which have involved fatalities. For example, on March 27, 1977, a K.L.M. Boeing 747 collided with a taxiing Pan American Boeing 747 at Los Rodeos (Tenerife) Airport killing 583 persons. On December 20, 1972, 10 persons lost their lives when a North Central Airlines DC-9 collided with a taxiing Delta Airlines Convair 880. This commenter is also concerned that certain passenger information announcements by flight crews during taxi will be prohibited by the proposal. Studies of ASRS reports show that cabin announcements made by flight crewmembers during critical phases of flight can be dangerously distracting. The rules are clear. Flight crewmembers shall not make cabin announcements during taxi, unless such announcements are in response to safety related situations such as announcements made to direct passengers to take their seats until the aircraft has arrived at the gate.

One commenter asks if a flight attendant may, for example, enter the cockpit to report an illness on board the aircraft or whether there could be a report made of malfunctioning galley equipment. A flight attendant's decision to enter the cockpit during critical phases of flight to make a report must be tempered by good judgement. Certainly, a flight attendant would not, for example, be prohibited from reporting an illness or disturbance which was of a serious nature. Proper flight attendant training will greatly aid in making the proper decision. Flight attendants shall not enter the cockpit during critical phases of flight to report cabin mechanical malfunctions that are not safety related, such as broken movie projectors or inoperative coffee makers.

One commenter is concerned that the sterile atmosphere generated by the proposals could mask subtle incapacitation. The FAA does not agree. There are several other symptoms of subtle incapacitation other than the absence of verbal communications and flight crewmembers are trained to recognize them. Another commenter points out that extraneous conversation under certain circumstances enhances safety by assuring alertness of flight crewmembers. There is considerable merit to this comment and the FAA's decision to modify the definition of critical phases of flight is based in part upon this concern. However, in view of this modified definition of critical phases of flight, the FAA has determined that the prohibition against extraneous conversation will not adversely affect safety because of the relatively short period of time during a flight in which such conversation is prohibited.

Similarly the FAA disagrees with the views of another commenter who states that the working conditions which would result from the proposals would encourage an atmosphere of noncommunication and distrust between cockpit crew and cabin attendants. Again, extraneous conversation is to be prohibited for such a relatively short period of total flight time that overall communication between cockpit crew and cabin attendants will not be significantly affected.

One commenter states that good judgement cannot be legislated, and that it must be accomplished by establishment of sound company policy and procedures, and effective training. The FAA agrees that the institution by each operator of proper cockpit sterilization procedures in its manuals and training programs would further the intent of the rules. However, while the FAA supports the existence of such company policy, its existence alone is not sufficient since company policy does not have the effect of law and cannot be enforced by the FAA.

One commenter recommends that the rules address the conduct of nonfunctioning (jumpseat) crewmembers in the cockpit. The FAA agrees that the presence of such persons in the cockpit could be potentially distracting, and therefore the proposals are revised to require the pilot in command prohibit activity which is distracting to flight crewmembers by any cockpit occupant during critical phases of flight. The FAA does not consider the mere presence of a duly authorized FAA inspector or nonfunctioning crewmember in the cockpit to be a distraction which is in violation of these rules.

DESCRIPTION OF THE AMENDMENTS

These amendments add two new sections to the Federal Aviation Regulations, §§ 121.542 and 135.100. Both sections use identical language in prohibiting the performance of nonessential duties and activities by flight crewmembers or other occupants of the cockpit during critical phases of flight. The following are some examples of flight crewmember duties which are unnecessary for the safe operation of an aircraft: company-required calls made for such nonsafety related purposes as ordering galley supplies and confirming passenger connections; PA announcements made to promote passenger entertainment including announcements pointing out sights of interest; and time spent in the flight crew compartment filling out company paycards and personnel records.

With respect to the prohibition against the performance of nonsafety related activities, the proposals have been revised to reflect that no flight crewmember shall engage in any activity during a critical phase of flight which would distract any flight crewmember from his or her duties or which would interfere in any way with the proper conduct of those duties. In addition, the pilot in command is now required to prohibit any activity by any cockpit occupant during a critical phase of flight which is distracting to a flight crewmember. Notice 80-12 addressed only the conduct of those persons who were required flight crewmembers. The proposals were revised to respond to commenters concerned with disruptive conduct by crewmembers deadheading on board a flight. In addition, the proposals have been revised by adding an example of a nonessential activity; i.e., reading publications not related to the proper conduct of a flight. Critical phases of flight is expanded in the final rules to allow nonessential duties and activities to be conducted above 10,000 feet, and during cruise flight at any altitude. The definition of critical phases of flight is modified in response to those commenters who state that the definition set forth in Notice 80-12 is too stringent for short haul operations.

The proposals have been further revised by adding the word "communications" to the list of those activities which are sometimes prohibited. Such communications may, for example, include interphone exchanges between cabin crew and flight deck crew, and the sounding of bells in the cockpit to summon the attention of flight deck crewmembers.

ADOPTION OF THE AMENDMENTS

Accordingly, Parts 121 and 135 of the Federal Aviation Regulations (14 CFR 121 and 135) are amended effective May 18, 1981.

(Secs. 313(a) and 601 through 605 of the Federal Aviation Act of 1958 (49 U.S.C. 1354(a), 1421 through 1425; Sec. 6(c), Department of Transportation Act (49 U.S.C. 1655(c)).

NOTE: The Federal Aviation Administration has determined that this document involves regulations which are not significant under Executive Order 12044, as implemented by Department of Transportation Regulatory Policies and Procedures (44 FR 11034, February 26, 1979). A copy of the regulatory evaluation prepared for this action is contained in the regulatory docket. A copy of it may be obtained by contacting the person identified above under the caption "FOR FURTHER INFORMATION CONTACT."

This rule is a final order of the Administrator of the FAA under the Federal Aviation Act of 1958, as amended (49 U.S.C. 1485). As such, it is subject to review only by the courts of appeals of the United States or the United States Court of Appeals for the District of Columbia.

Amendment 135-12

Amendments of Effective Date of Part 125 and Amendments Adopted in Relation to Part 125

Adopted: January 30, 1981 **Effective: April 1, 1981**

(Published in 46 FR 10902, February 5, 1981)

SUMMARY: On January 29, 1981, the President issued a memorandum to certain agency heads directing that they issue a notice in the *Federal Register* postponing for 60 days after January 29, 1981, the effective date of regulations that have already been issued but were scheduled to become effective in the next 60 days. This amendment consistent with the President's directive, postpones the effective date of the new Part 125 and related amendments from February 1, 1981, to April 1, 1981.

FOR FURTHER INFORMATION CONTACT: Harold E. Smith, Regulatory Projects Branch (AVS-24), Safety Regulations Staff, Associate Administrator for Aviation Standards, Federal Aviation Administration, 800 Independence Avenue, S.W., Washington, D.C. 20591; telephone (202) 755-8716.

SUPPLEMENTARY INFORMATION:

Background

Part 125 was published in the Federal Register on October 9, 1980, (45 FR 67214). That Part, and related amendments to Parts 43, 91, 121, 123, 135, and 145 have an effective date of February 1, 1981. On January 29, 1981, the President issued a memorandum which directs that all agencies, by notice in the Federal Register, postpone for 60 days from January 29, 1981, the effective date of all regulations that have been promulgated in final form and that are scheduled to become effective during that 60 day period. Part 125, and regulations adopted with it, fall within the scope of the President's memorandum.

The President stated in his memorandum that the establishment of a new regulatory oversight program that will lead to less burdensome and more rational Federal regulations was among his priorities as President. He indicated that this program was especially important because of the country's economic climate.

In order to give his Administration, through the Task Force on Regulatory Relief, sufficient time to implement that process and to subject to full and appropriate review many recent regulations that would increase rather than relieve the current burden of restrictive regulation, he directed the postponement of pending regulations.

Consistent with this view, I am by this notice postponing for 60 days the effective day of Part 125.

Description of These Amendments

The effective date of Part 125 and of related Amendments 43-21, 91-169, 91-170A, 121-164, 123-9, 135-7, and 145-17 is changed from February 1, 1981, to April 1, 1981. In addition, in order to preserve the application and compliance procedure timing, certain dates specified in any of the related amendments listed in the preceding sentence are revised. However, although the effective date of Amendment 91-170A is changed from February 1, 1981, to April 1, 1981, the designation date of November 29, 1980, for applicable noise rule is unchanged.

Need for Immediate Adoption

The FAA realizes that the postponement of pending regulations may not be viewed by certain persons to be in their best interests. However, in accordance with the President's directive, the economic condition of the nation is such that the government must rethink the need and expense of each new regulation. For a new Administration and any new Department head to effectively accomplish this objective, some time is needed for adequate review. Sixty days is the minimum period to accomplish such a review and the impact of such a delay will be minimal. For these reasons, the FAA is convinced that good cause exists for postponing for up to 60 days the effective date of this rule for 60 days and that the end result of such a delay, a more cohesive and effective regulatory program, is in the public interest. For similar reasons and because of this rule is scheduled to become effective very shortly, additional notice and public procedure on this change of effective dates is impracticable, unnecessary and contrary to the public interest and good cause exists for making these changes effective immediately. Since this change of effective dates must be accomplished immediately and does not involve rulemaking, compliance with Executive Order 12044 is also unnecessary.

Accordingly, consistent with the President's memorandum of January 29, 1981, on Postponing of Pending Regulations, the effective dates of Part 125 is postponed until April 1, 1981.

Adoption of the Amendments

Accordingly, 14 CFR Chapter I is amended as follows:

1. By amending the effective date February 1, 1981, of Part 125 and Amendment Nos. 43-21, 91-169, 91-170A, 121-164, 123-9, 135-7, and 145-17 to read April 1, 1981 in each case.

Sections 307, 313, 601 through 611, and 1102, Federal Aviation Act of 1958, as amended (49 U.S.C. 1348, 1354, 1421-1431 and 1502; section 6(c) Department of Transportation Act (49 U.S.C. 1655(c)); Title III, Aviation Safety and Noise Abatement Act of 1979 (94 Stat. 50).

Additional Actions Pending

In addition to the amendments adopted herein, the Agency has other regulatory actions as to which it has not been able to act to carry out the President's memorandum because they have been issued by the various FAA Regions. These include, but are not limited to, airworthiness directives, airspace actions, and standard instrument approach procedures. Additional postponements of these regulations will be issued in the next several days to comply with the President's memorandum.

Amendment 135-12A

Amendments of Effective Date of Part 125 and Amendments Adopted in Relation to Part 125

Adopted: February 3, 1981 **Effective: February 3, 1981**

(Published in 46 FR 10903, February 5, 1981)

SUMMARY: This document reestablishes the effective date of new Part 125 and related amendments to February 3, 1981. This change in effective date is necessary since the Office of Management and Budget, in accordance with the President's Memorandum dated January 29, 1981, concerning postponement of pending regulations, authorized the FAA to allow Part 125 to become effective without further delay.

FOR FURTHER INFORMATION CONTACT: Edward P. Faberman, Assistant Chief Counsel for Regulations (AGC-200), Regulations and Enforcement Division, Office of the Chief Counsel, Federal Aviation Administration, 800 Independence Avenue, S.W., Washington, D.C. 20591; telephone: (202) 426-3235.

SUMMARY INFORMATION:

Background

Part 125 was published in the Federal Register on October 9, 1980, (45 FR 67214). That Part, and related amendments to Parts 43, 91, 121, 123, 135, and 145 had an effective date of February 1, 1981. On January 29, 1981, the President issued a memorandum which directed that all agencies, by notice in the Federal Register, postpone for 60 days from January 29, 1981, the effective date of all regulations that had been promulgated in final form and that were scheduled to become effective during that 60 day period. Part 125, and regulations adopted with it, fall within the scope of the President's memorandum.

In accordance with the President's memorandum the effective date of Part 125 was postponed by notice which is published in today's Federal Register (46 FR 10902, 2/5/81). That notice was issued on January 30, 1981, and forwarded to the Federal Register for publication. The Department of Transportation asked the Office of Management and Budget to allow Part 125 to become effective without delay. OMB reviewed that request and advised the Department on February 3, 1981, that Part 125 could become effective in accordance with the President's memorandum. This approval, however, was received by the Department after the Notice postponing the effective date had already been sent to the Government Printing Office by the Office of Federal Register. Therefore, it is necessary to issue this document to establish the effective date for Part 125 as February 3, 1981.

Consistent with this view, I am by this Notice establishing the effective date of Part 125 as February 3, 1981.

Description of Changes

The effective date of Part 125 and of related Amendments 43-21, 91-169, 91-170A, 121-164, 123-9, 135-7, and 145-17 is changed to February 3, 1981. In addition, in order to preserve the application and compliance timing, certain dates specified in any of the related amendments listed in the preceding sentence are similarly revised.

Need for Immediate Adoption

Since the Office of Management and Budget approval was too late to stop publication of the January 30 Notice and since the Notice must be rescinded, I find that notice and public procedure are impracticable and contrary to the public interest and good cause exists for making these amendments effective in less than 30 days.

Change of Dates

Accordingly, 14 CFR Chapter I is changed as follows:

1. By changing the effective date of Part 125 and Amendment Nos. 43-21, 91-169, 91-170A, 121-164, 123-9, 135-7, and 145-17 to read February 3, 1981 in each case.

Sections 307, 313, 601 through 611, and 1102, Federal Aviation Act of 1958, as amended (49 U.S.C. 1348, 1354, 1421-1431 and 1502); section 6(c) Department of Transportation Act (49 U.S.C. 1655 (c)); Title III, Aviation Safety and Noise Abatement Act of 1979 (94 Stat. 50).

Amendment 135-13

Delay of Compliance Date for Instrument Rating Requirement

Adopted: May 18, 1981 **Effective: May 19, 1981**

(Published in 46 FR 28301, May 26, 1981)

SUMMARY: This amendment delays from February 1, 1981, to August 1, 1981, the date for compliance with the requirement that pilots in command of air taxi and commercial operator (Part 135) aircraft must have an instrument rating (§ 135.243). This action provides interim regulatory relief to pilots and operators under Part 135 while the FAA revises § 135.243 to provide permanent relief from the instrument rating requirement for certain operations. The Director, Office of Management and Budget (OMB), has exempted rules that delay compliance dates from sections 3, 4, 7, and 8 of Executive Order 12291. This amendment is consistent with the remaining requirements of Executive Order 12291 and the Regulatory Flexibility Act.

FOR FURTHER INFORMATION CONTACT:

William J. Sullivan, Chief, Safety Regulations Staff (AVS-20)
Associate Administrator for Aviation Standards
Federal Aviation Administration
800 Independence Avenue, S.W.
Washington, D.C. 20591; Telephone (202) 755-8716.

SUPPLEMENTARY INFORMATION:

Compliance Date for Instrument Rating Requirements

On September 26, 1978, the FAA issued a revised Part 135 of the Federal Aviation Regulations (FAR), "Air Taxi Operators and Commercial Operators" (43 FR 46742; October 10, 1978). This revision was effective on December 1, 1978. Section 135.243(b) (3) requires an instrument rating for pilots in command of airplanes. Under § 135.10, pilots and operators were given until June 1, 1979, to comply with this requirement. The FAA received numerous petitions for exemption from the instrument rating requirement. As a result, the FAA determined that additional rulemaking regarding that requirement should be initiated before compliance with the instrument rating became mandatory. To allow this, the FAA changed the compliance date in § 135.10 for the instrument rating requirement to December 1, 1980 (44 FR 26737; May 7, 1979).

On November 28, 1980, the FAA again extended the compliance date for the instrument rating to February 1, 1981 (45 FR 80460; December 4, 1980). At the same time, the FAA issued Notice 80-23 (45 FR 80450) which proposed certain changes in the instrument rating requirement. The comment period on Notice 80-23 closed on February 4, 1981.

The FAA found that additional time was needed to evaluate properly comments received in response to Notice 80-23 and to formulate the FAA's final course of action. Therefore, the FAA planned to extend the compliance date to May 1, 1981. However, that extension was not completed before it became necessary to review the agency's regulatory actions to determine compliance with Executive Order 12291. Discussions were held with OMB on this proposed extension. This rulemaking, along with several others, generated an exemption from certain provisions of Executive Order 12291 by the Director of OMB. The exemption allows this particular document to be issued without submission to OMB.

The FAA has received numerous calls and exemption petitions from operators and pilots seeking relief from this rule. Many pilots claim that they face the loss of their jobs and, in some cases, they have lost their jobs. Operators claim that they are losing business. The FAA is developing a rule to provide permanent relief to certain operators based on comments received in response to Notice 80-23. The FAA has determined that it is appropriate to again delay the date for compliance with the instrument rating requirement for all Part 135 operators from February 1, 1981, to August 1, 1981, to allow completion of the rulemaking proposed in Notice 80-23.

Notice and Public Procedure

This amendment provides temporary regulatory relief to pilots and to air taxi and commercial operators and does not impose any economic burden on those operators. Accordingly, I find that notice and public procedure are unnecessary and contrary to the public interest and that good cause exists for making this amendment effective in less than 30 days.

Adoption of the Amendment

Accordingly, Part 135 of the Federal Aviation Regulations (14 CFR Part 135) is amended, effective May 19, 1981, by removing the date "February 1, 1981" in § 135.10(c) and inserting in its place the date "August 1, 1981."

NOTE: The FAA has determined that this regulation provides interim relief for certain operators while the agency is completing rulemaking action proposed in Notice 80-23. It therefore: (1) is not a "major rule" under Executive Order 12291; (2) is not a "significant regulation" under the Department of Transportation Regulatory Policies and Procedures (44 FR 11034; February 26, 1979); (3) does not warrant a regulatory evaluation; and (4) will not have a significant economic impact on a substantial number of small entities under the criteria of the Regulatory Flexibility Act.

(Secs. 313(a) and 601 through 605 of the Federal Aviation Act of 1958 (49 U.S.C. 1354(a), 1421 through 1425); Sec. 6(c) of the Department of Transportation Act (49 U.S.C. 1655(c)).)

Amendment 135-14

Elimination of Duties and Activities of Flight Crewmembers Not Required for the Safe Operation of Aircraft

Adopted: May 18, 1981 **Effective: June 18, 1981**

(Published in 46 FR 28305, May 26, 1981)

SUMMARY: This amendment amends the effective date of Amendments 121-168 and 135-11 issued on January 14, 1981. The effective dates are being postponed for 30 days at the direction of the Office of Management and Budget in order that they be allowed to complete their review of these amendments as required by Section 7, paragraph (b) of Executive Order 12291.

EFFECTIVE DATE: As of May 18, 1981, the effective date of the regulations published at 46 FR 5500 has been delayed until June 18, 1981.

FOR FURTHER INFORMATION CONTACT:

Edward P. Faberman, Assistant Chief Counsel (AGC-200)
Regulations and Enforcement Division
Federal Aviation Administration
800 Independence Avenue, S.W.
Washington, D.C. 20591; Telephone (202) 426-3073.

SUPPLEMENTARY INFORMATION:

On January 14, 1981, the FAA issued Amendment Nos. 121-168 and 135-11 (46 FR 5500, January 19, 1981). These amendments prohibit performance of nonessential duties and activities by flight crewmembers which are not required for the safe operation of aircraft during critical phases of flight. These amendments require operators and flight crewmembers to assure a flight deck environment that is free from distractions created by the performance of nonessential flight crewmember duties.

Executive Order 12291 was issued by the President on February 17, 1981. Section 7, paragraph (b), requires that agencies report any regulation falling within the requirements of this section to the Director of the Office of Management and Budget (OMB) prior to the effective date of any rule that the agency had promulgated in final form, as of the date of the Executive Order, and that had not become effective. Since the effective date of Amendments 121-168 and 135-11 was May 18, 1981, it was necessary that the Director be notified of this rule. The General Counsel of the Department of Transportation notified OMB that this had been reconsidered under the Executive Order and should become effective.

On May 15, 1981, the Office of Information and Regulatory Affairs, OMB, notified the Office of the General Counsel of the Department of Transportation, by telephone, that they needed more time to review this rule and that, therefore, the effective date of the rule had to be postponed. In accordance with this direction, the effective date of this rule is postponed by 30 days to June 18, 1981.

ADOPTION OF AMENDMENT

In order to provide additional time for OMB to review this rule in accordance with Executive Order 12291, the effective dates of Amendments 121-168 and 135-11 are amended to June 18, 1981.

[Secs. 313(a) and 601 through 605 of the Federal Aviation Act of 1958 (49 U.S.C. 1354(a), 1421 through 1425); Sec. 6(c), Department of Transportation Act (49 U.S.C. 1655(c))].

NOTE—Since this document only involves a change of effective dates, the FAA has determined that: (1) It is not a major regulation under Executive Order 12291; (2) It is not significant under the Department of Transportation Regulatory Policies and Procedures (44 FR 11034; February 26, 1979); and (3) It does not warrant preparation of a regulatory evaluation as the impact is so minimal.

Amendment 135-15

Pilot-in-Command Qualifications and Instrument Proficiency Check Requirements

Adopted: May 11, 1981 **Effective: June 11, 1981**

(Published in 46 FR 30968, June 11, 1981)

SUMMARY: Part 135, effective December 1, 1978, required all pilots in command to hold instrument ratings. It also required pilots to satisfactorily demonstrate instrument approach procedures using certain navigational facilities. These requirements are unduly restrictive for some certificate holders. This amendment provides that pilots are not required to hold instrument ratings when operating in day, visual flight rule conditions in certain isolated areas when conducting air taxi or commercial operations. It also provides that only those instrument procedures which the certificate holder desires to be used are required to be demonstrated. This amendment reduces burdens on certain air taxi and commercial operators and is therefore consistent with Executive Order 12291 and the Regulatory Flexibility Act.

FOR FURTHER INFORMATION CONTACT:

Ms. Marilyn M. Sidwell, Regulatory Projects Branch (AVS-24)
Safety Regulations Staff
Associate Administrator for Aviation Standards
Federal Aviation Administration
800 Independence Avenue, S.W.
Washington, D.C. 20591; Telephone (202) 755-8716.

SUPPLEMENTARY INFORMATION:

Background

§ 135.243—Pilot-in-Command Qualifications

An amendment was adopted on September 26, 1978, which revised the requirements for operations by persons holding Air Taxi/Commercial Operators Certificates and required all pilots in command to hold instrument ratings. Section 135.10(c) originally required compliance with this requirement by June 1, 1979.

Following publication of the revised Part 135, the FAA received numerous petitions for exemption from the instrument rating requirement. In addition, several inquiries were received from members of Congress who were seeking information for constituents who wanted relief from the instrument rating requirement. The majority of these requests for relief were from certificate holders who conduct on-demand charter operations in remote areas which are located in the northern United States. Almost all of the requests were from seaplane operators conducting day VFR operations that carry hunting or fishing groups to isolated locations or provide cargo service to small, isolated settlements which lack access to other commercial transportation means. In virtually all instances, these operators serve areas that are so remote there are no navigation facilities suitable for use. Because of the absence of these facilities and the day VFR nature of the operations, their aircraft are not equipped for instrument flight operations. Consequently, they use pilots who do not hold instrument ratings. However, these pilots are highly experienced and are thoroughly familiar with the terrain, alternate landing areas, and weather patterns in the area of operations.

In response to the situation, Amendment No. 135-1, effective May 7, 1979, (44 FR 26737) extended the compliance date of the instrument rating requirement until December 1, 1980. This action was taken to provide time for the FAA to restudy this requirement and possibly adopt changes regarding its scope.

Notice 80-23 (45 FR 80450), Miscellaneous Amendments, was issued on November 28, 1980. This notice proposed changes to numerous sections of the FAR. Most of the proposals were clarifying, editorial, or corrective in nature. However, one proposal involved changing the Part 135 pilot-in-command requirements to allow pilots to conduct flights during the day under VFR in certain isolated areas without holding an instrument rating. The closing date for comments was February 4, 1981.

Amendment No. 135-9 (45 FR 80460), effective December 1, 1980, further extended the compliance date for the instrument rating requirement to February 1, 1981, to allow the agency adequate time to consider alternatives and determine a course of action.

§ 135.297—Pilot in Command: Instrument Proficiency Check Requirement

When Part 135 was revised, the pilot-in-command instrument proficiency check requirements were modified. Under that revision, § 135.297 requires each pilot in command to demonstrate satisfactorily at least one instrument approach procedure using an instrument landing system (ILS), a very high frequency omnirange station (VOR), and a nondirectional radio beacon (NDB). Some air taxi certificate holders contend that the revised requirement is too restrictive. For example, some certificate holders state they have no need to use ILS facilities and that the nearest ILS facility is located a significant distance from the certificate holder's operations base. It is argued that the present rule requires unreasonable expenditures of aircraft and pilot operational expense to demonstrate proficiency on a facility which is not used by some certificate holders.

Notice 80-23 proposed that only those instrument approach procedures which the certificate holder desires to use are required to be demonstrated.

Discussion of Comments

§ 135.243—Pilot-In-Command Qualification

The FAA has reviewed the necessity for an instrument rating in light of comments received from Notice 80-23. It has concluded that it is appropriate to amend the present regulation to allow certain pilots in command operating under Part 135 to operate under day, visual flight rule conditions into isolated areas or settlements without having an instrument rating. A new paragraph (d) is added to § 135.243 to implement this amendment.

Notice 80-23 stated that § 135.243(b) (3), which requires an instrument rating, would not apply to nonstop flights between the certificate holder's main base and seaplane landing area or the return flight, subject to specific limitations. After considering comments which indicate that the proposal is too restrictive, the rule is amended to apply to single reciprocating-engine-powered airplanes, including seaplanes, skiplanes, and landplanes. In addition, the FAA has determined that the nonstop flight requirement is unnecessary and is deleted.

Section 135.243(d) (2) prohibits certain scheduled operators and mail carriers, such as commuter air carriers, from using pilots in command without instrument ratings. No comments were received on this proposal and it is adopted as proposed.

Notice 80-23 proposed that it would not be necessary for a pilot in command in a Part 135 operation flying under day VFR conditions to have an instrument rating when there is no VOR or NDB facility within 40 nautical miles of the certificate holder's main base, the destination, or straight-line course between the main base and destination. In response to the notice, one commenter states that aircraft that are used in day, VFR operations are not required to be radio equipped, making such a proposal useless. Another commenter took issue with the 40-nautical-mile stipulation stating that although a facility may be within the 40-nautical-mile range, it does not necessarily mean that it can be useful on trips to these isolated areas or settlements.

Three other commenters object to this requirement since they could operate in these areas within 40 nautical miles of the facilities and still not receive a reliable signal due to the nature of the terrain. These commenters feel that climbing to any altitude to get a reliable signal would be time consuming and, at today's cost, would result in substantial loss of business. These flights would be especially impacted since they are of such short duration. The FAA reevaluated this aspect of the proposal and concludes that the requirement concerning the VOR and NDB facility is too restrictive and the rule is amended by deleting this requirement. It was proposed as a means of expressing in objective terms the concept that isolated areas ordinarily do not have radio navigational aids.

The FAA has decided that the certificate-holding Flight Standards district office should determine whether the area to be served is an isolated area since it is familiar with areas within its jurisdiction. Accordingly, § 135.243(d)(3) is added which states that the area, as specified in the certificate holder's operations specifications, is an isolated area as determined by the certificate-holding Flight Standards district office if it is shown that the primary means of navigation in the area is by pilotage, since radio navigational aids are largely ineffective, and the primary means of transportation in the area is by air. Before approving the area as an isolated area, the Flight Standards district office ascertains that the entire operation, that is, takeoff, en route travel, and landing, will be conducted within the area.

Section 135.243(d)(4) provides that pilots in command not holding instrument ratings may operate within isolated areas during day, VFR conditions with a ceiling of not less than 1,000 feet and visibility not less than 3 statute miles. Two commenters propose that the visibility restriction be changed to 1 statute mile visibility and that the flight be conducted clear of all clouds since most operations are in noncontrolled airspace. The FAA disagrees. Section 135.205(a) prohibits operations under VFR in uncontrolled airspace when the ceiling is less than 1,000 feet and flight visibility is less than 2 statute miles. This applies to all operations under Part 135. The FAA sees no reason to lessen this requirement. The 3-mile visibility minimum is necessary because it would allow noninstrument-rated pilots additional time to maneuver to alternate landing areas in the event of deteriorating weather in the isolated area. Therefore, § 135.243(d)(4) is adopted as proposed.

Section 135.243(d)(5) is adopted as proposed in the notice. This provides that an operation may be conducted when weather reports or forecasts, or any combination of them, indicate that for the period commencing with the planned departure and ending 30 minutes after the planned arrival at the destination, the flight may be conducted under VFR with a ceiling of not less than 1,000 feet and visibility of not less than 3 statute miles. However, if weather reports or forecasts are not available, the pilot in command may use that pilot's observations or those of other persons competent to supply weather observations if those observations indicate the flight may be conducted under VFR with the ceiling and visibility required in this paragraph.

One commenter interprets the proposal to mean that all weather briefings and forecasts must come from local General Aviation District Office (GADO) facilities rather than Flight Service Stations or local forecasting facilities. This interpretation is incorrect. This rule does not change the provisions of § 135.213(a) regarding weather reports and forecasts. These reports and forecasts are not available at GADO's. The provisions for weather reports and forecasts are incorporated in § 135.243(d)(5) to ensure the proper preflight planning to conduct the flight during VFR weather conditions with a ceiling of not less than 1,000 feet and visibility of not less than 3 statute miles. The use of pilot observations or those of other persons competent to supply weather information may also be used when the official reports and forecasts are not available.

Proposed § 135.243(d)(7) limited the distance of each flight from departure point to destination to 250 nautical miles for a pilot in command who holds a commercial pilot certificate with an airplane category rating issued before February 1, 1973, without an instrument rating, or 50 nautical miles in the case of a pilot in command who holds a commercial pilot certificate with an airplane category rating issued after February 31, 1973, without an instrument rating. However, some commercial pilot certificates were issued without instrument ratings and without mileage limitations after February 1, 1973, in accordance with §§ 61.1 and 61.71. The FAA determined that these pilots should be included in the amendment. The amendment allows operation where the distance of each flight from the certificate holder's base of operation to destination does not exceed 250 nautical miles by a pilot who holds a commercial pilot certificate with an airplane rating without an instrument rating, provided that pilot's certificate does not contain any limitations to the contrary.

Two commenters state that the 250-nautical-mile restriction on distances is acceptable since pilots cannot possibly be familiar with areas outside this limit. Two other commenters disagree and feel that the distance restriction should be relaxed since initial certification training requires longer flights. One commenter asks if 250 nautical miles is good, why not 300 miles or 400 miles? The FAA recognizes that some commenter may believe that a limitation other than 250 miles may be more appropriate. However, it is clear that some limit must be given in this rule. No commenter provided quantitative data to support any other mileage limitation. The 250-nautical-mile limit is approximately 2 hours flight time in the airplanes used in these operations. Operations conducted within this limitation would minimize the effects of rapidly changing weather conditions and more likely result in the pilot in command having sufficient knowledge of the area of operations. The FAA has determined that limiting flights to 250 nautical miles from the certificate holder's base of operations provides an acceptable level of safety. A base of operation can be the certificate holder's main base or one or more bases established at the locations more convenient to the isolated area to be served. The approval of the certificate-holding district office is necessary before establishing or changing the area of operation. Proposed § 135.243(d) (7) is redesignated § 135.243(d) (6) to provide a more logical listing and is adopted with the changes discussed.

Section 135.243(d) (7) (proposed (d) (6)) allows pilots in command to operate without the instrument rating when the areas to be flown are approved by the certificate-holding FAA Flight Standards district office and are listed in the certificate holder's operations specifications. Notice 80-23 proposed approval of routes to be flown. One commenter states that approval on every individual route is impractical due to the numerous routes connected with on-demand charter operations. The FAA would be unable to approve each route in on-demand operations since these could involve thousands of different variations. Another commenter states that all deviations from the instrument rating rule should be handled by the local GADO. The FAA concludes that the certificate-holding office should have approval authorization of these operations and should approve specific areas of operation subject to review by the regional office. In addition, while Notice 80-23 did not specify what method was to be used for approval of operations by the FAA, it is determined that the areas of operation shall be listed in the certificate holder's operations specifications. Therefore, proposed § 135.243(d) (6) is redesignated § 135.243(d) (7) and is adopted with these changes.

§ 135.297—Pilot in Command: Instrument Proficiency Check Requirements

§ 135.297(b) provides that only those instrument approach procedures which the certificate holder desires to use are required to be demonstrated. Thus, each certificate holder would determine from the characteristics of its operation which procedures it needs. This amendment relaxes requirements and provides the air taxi operator flexibility in electing the kinds of approaches authorized. The certificate holder may elect to use only one kind of approach or several, whatever suits its operation. Safety is maintained by requiring the certificate holder to provide initial and recurrent training for each type of approach to be used. This ensures that each pilot receives flight training to proficiency, as specified in § 135.341(a), on each type of procedure to be used. Therefore, the proposed requirement that training for all instrument approach procedures to be used by the certificate holder should be included in the certificate holder's initial and recurrent training program is repetitive and is deleted. The operator is issued operations specifications which contain the instrument approach procedures authorized.

One commenter opposes the change because, by virtue of the type of flying conducted, an operator will be executing instrument approaches to many different navigational aids. The commenter contends that by allowing an operator to select only those approaches that would normally be used in its operation, it is conceivable that a pilot could be forced to execute an approach he or she is not authorized to use because the kind of approach the pilot planned to use was out of service at the destination. This proposal was initiated because of numerous certificate holders located at airports where an ILS/NDB is not available and a substantial cost is involved in demonstrating ILS, NDB, and VOR approaches. The amendment provides flexibility in the rule. Operators will have to plan IFR flights carefully to handle the possibility of a facility being out of service.

The previous rules required each pilot in command to demonstrate satisfactorily at least one instrument approach using an ILS, a VOR, and an NDB facility before a letter of competency is issued to that pilot authorizing IFR operations. Some air taxi certificate holders contend that the requirement is too restrictive, especially if they have no need to use these approaches and the nearest facility is located a significant distance from a certificate holder's base of operations.

To ensure an adequate level of safety, § 135.297(b) allows a pilot to use only those precision approach procedures satisfactorily demonstrated. To use any nonprecision instrument approach procedure, a pilot is required to demonstrate satisfactorily that procedure or any other two nonprecision instrument approach procedures. One commenter was unsure as to the identification of nonprecision approaches. Examples of nonprecision approaches are localizer, localizer (back course), VOR, VOR-DME, NDB, and ASR.

As proposed in Notice 80-23, § 135.297(h) is deleted. The certificate holder is required by § 135.63 to maintain records showing the qualifications of its pilots and to designate operations its pilots are authorized to conduct. This includes the types of instrument approach procedures and facilities authorized and pilot-in-command autopilot authorization. Therefore, § 135.297(h) is not needed. Section 135.297(a) is modified to delete the requirement for a letter of competency.

Economic Analysis

The FAA conducted an economic impact study to determine the benefits and costs of the pilot-in-command qualifications and instrument proficiency check requirement revisions for Part 135 certificate holders. The study is included in the regulatory docket for this final rule.

The FAA found that both industry and the FAA would be affected by the regulatory changes. Expected benefits are cost savings. These cost savings include lower fuel expenses resulting from fewer required instrument training and instrument check flights. Costs include the potential operator's insurance premium reductions if affected pilots had their instrument ratings and the additional FAA workload necessary to issue appropriate operations specifications to operators using pilots without instrument ratings. Neither the FAA nor the industry would incur any additional costs as a result of the changes to the rules on instrument proficiency checks. Finally, the FAA found that the impact on the U.S. economy will be extremely small. The number of certificate holders affected by the changes is small in comparison with the total number of certificate holders. However, the regulatory changes could result in significant time and cost savings to those individuals affected by the pilot-in-command revisions. Therefore, these revisions carry out the intent of the Regulatory Flexibility Act by reducing the regulatory burden for essentially small air taxi operators which provide unique service to remote areas of the United States.

To determine the economic impact of the changes to the instrument rating requirement of § 135.243, the FAA surveyed its regional offices and reviewed requests for extension of the compliance date. As a result of the survey, the FAA concludes that there are no more than 100 pilots who would be affected by this rule. Cost savings to the pilots were estimated by multiplying the average number of additional hours of training required for them to obtain instrument ratings by the average training cost per hour, and adding to that total the present value of the potential revenue loss resulting from not being able to fly without an instrument rating. Industry costs are potential operator insurance premium reductions if affected pilots obtained instrument ratings. An operator must pay a risk insurance premium for pilots without instrument ratings. A survey of aviation insurers indicates that operators' insurance premiums would be reduced if they utilize pilots holding instrument ratings. Industry costs were estimated by multiplying the insurance premium risk differential by the number of affected pilots. The present value of these costs was determined because industry costs will accrue each succeeding year an operator uses a pilot without an instrument rating. These costs represent a "worst" case. Actual industry costs may be lower. FAA costs were estimated by calculating the administrative costs required to issue an operations specification and multiplying this figure by the approximate number of Part 135 operators who would request such an action. A major portion of the cost to the FAA would be offset by not having to process petitions for exemption. The operator's costs to prepare for and travel to a meeting at the certificate-holding Flight Standards district office to get an operations specification were assumed to be insignificant and much less than the cost savings they would accrue.

To calculate the economic benefits of the pilot-in-command instrument proficiency check requirement revisions, the FAA first estimated the percentage of the total certificated commercial pilots who would not have to demonstrate ILS, VOR, and NDB approaches. It estimated that a maximum of 10 percent of the total certificated commercial pilots would be in this category. For the purpose of this analysis, the FAA judged the ILS proficiency check as the most likely check to be foregone. In many cases, an ILS is very far from an affected operator's base. The cost savings to affected operators will result from eliminating the expenses for aircraft operation and pilot time needed for an instrument proficiency check. The present value of the cost savings was determined because an ILS check is required twice a year and a certificate holder who elects not to use ILS approaches will not only accrue cost savings in the year the revision becomes effective but also in each succeeding year. In addition, FAA would save the cost of the administrative time used to perform and rate an instrument proficiency check.

The results of the FAA economic study demonstrate that the savings to affected Part 135 operators, pilots, and Federal Government will exceed any costs incurred in implementing either rule. These savings are summarized in the following table:

Summary of the Present Value of the Economic Impact of
Part 135 Pilot-In-Command Revisions

	Benefits	*Costs*
PIC Qualification		
Industry	$ 450,000	$127,200
Government	—	2,500
Total	$ 450,000	$129,700
PIC Instrument Check		
Industry	$3,208,210	—
Government	326,895	—
Total	$3,535,105	$ -0-

THE AMENDMENT

Accordingly, Part 135 of the Federal Aviation Regulations (14 CFR Part 135) is amended effective June 11, 1981.

(Secs. 313(a), 601 through 605 of the Federal Aviation Act of 1958 (49 U.S.C. 1354(a), 1421 through 1425); sec. 6(c), Department of Transportation Act (49 U.S.C. 1655(c)); and 14 CFR 11.45.)

NOTE: The FAA has determined that this regulation relaxes requirements for certain operators. It therefore: (1) is not a "major rule" under Executive Order 12291; (2) is not a "significant regulation" under the Department of Transportation Regulatory Policies and Procedures (44 FR 11034; February 26, 1979); and (3) will not have a significant economic impact on a substantial number of small entities under the criteria of the Regulatory Flexibility Act. The regulatory evaluation contained in the docket shows that this rule relieves an economic burden on certain small entities. A copy of the evaluation may be obtained from the person identified under the caption "FOR FURTHER INFORMATION CONTACT."

Amendment 135-16

Elimination of Duties and Activities of Flight Crewmembers Not Required for the Safe Operation of Aircraft

Adopted: June 17, 1981 **Effective: July 18, 1981**

(Published in 46 FR 32863, June 25, 1981)

SUMMARY: This amendment amends the effective date of Amendments 121-168 and 135-11 issued on January 14, 1981. The effective dates are being postponed for an additional 30 days at the direction of the Office of Management and Budget in order that they be allowed to complete their review of these amendments as required by Section 7, paragraph (b), of Executive Order 12291.

EFFECTIVE DATE: As of June 18, 1981, the effective date of the regulations published at 46 FR 5500 is delayed until July 18, 1981.

FOR FURTHER INFORMATION CONTACT:

Edward P. Faberman, Assistant Chief Counsel (AGC-200)
Regulations and Enforcement Division
Federal Aviation Administration
800 Independence Avenue, S.W.
Washington, D.C. 20591; Telephone (202) 426-3073.

SUPPLEMENTARY INFORMATION:

On January 14, 1981, the FAA issued Amendment Nos. 121-168 and 135-11 (46 FR 5500, January 19, 1981). These amendments prohibit performance of nonessential duties and activities by flight crewmembers which are not required for the safe operation of aircraft during critical phases of flight. These amendments require operators and flight crewmembers to assure a flight deck environment that is free from distractions created by the performance of nonessential flight crewmember duties.

Executive Order 12291 was issued by the President on February 17, 1981. Section 7, paragraph (b), requires that agencies report any regulation falling within the requirements of this section to the Director of the Office of Management and Budget (OMB) prior to the effective date of any rule that the agency had promulgated in final form, as of the date of the Executive Order, and that had not become effective. Since the effective date of Amendments 121-168 and 135-11 was May 18, 1981, it was necessary that the Director be notified of this rule. The General Counsel of the Department of Transportation notified OMB that this had been reconsidered under the Executive Order and should become effective.

On May 15, 1981, the Office of Information and Regulatory Affairs, OMB, notified the Office of the General Counsel of the Department of Transportation, by telephone, that they needed more time to review this rule and that, therefore, the effective date of the rule had to be postponed. In accordance with this direction, the effective date of this rule was postponed by 30 days to June 18, 1981 (46 FR 28305; May 26, 1981).

The FAA has not been advised that OMB has completed its review. Therefore, the effective date of this rule is further postponed to July 18, 1981.

ADOPTION OF AMENDMENT

In order to provide additional time for OMB to review this rule in accordance with Executive Order 12291, the effective dates of Amendments 121-168 and 135-11 are amended to be July 18, 1981.

[Secs. 313(a) and 601 through 605 of the Federal Aviation Act of 1958 (49 U.S.C. 1354(a), 1421 through 1425); Sec. 6(c), Department of Transportation Act (49 U.S.C. 165(c))].

NOTE: Since this document only involves a change of effective dates, the FAA has determined that: (1) It is not a major regulation under Executive Order 12291; (2) It is not significant under the Department of Transportation Regulatory Policies and Procedures (44 FR 11034; February 26, 1979); (3) It does not warrant preparation of a regulatory evaluation as the impact is so minimal; and (4) It will not have a significant impact on a substantial number of small entities under the criteria of the Regulatory Flexibility Act since it is relieving in nature.

Amendment 135-17

Transport Category Airplanes—Pitot Heat Indication Systems

Adopted: August 7, 1981 **Effective: September 30, 1981**

(Published in 46 FR 43804, August 31, 1981)

SUMMARY: These amendments relieve general aviation operators of transport category airplanes that are operated under Part 91 from the requirement to install pitot heat indication systems to indicate to the flightcrew when the pitot heating system is not operating. The amendments are based on a study which indicates that there have not been any general aviation transport category airplane accidents that could be attributed to a pitot heating system failure. The rule change is also in response to a petition for rulemaking dated January 26, 1979, from the National Business Aircraft Association (NBAA).

FOR FURTHER INFORMATION CONTACT:

Joseph A. Sirkis, Regulatory Projects Branch (AVS-24)
Safety Regulations Staff,
Associate Administrator for Aviation Standards
800 Independence Avenue, SW., Washington, DC 20591;
telephone: (202) 755-8716.

SUPPLEMENTARY INFORMATION:

Notice of Proposed Rulemaking

These amendments are based on Notice of Proposed Rulemaking No. 80-27 (46 FR 76; January 2, 1981). All interested persons were given an opportunity to participate in the making of these amendments, and due consideration was given to all matters presented. These amendments and the reasons for their adoption are the same as those stated in Notice 80-27.

Background of This Rulemaking Proceeding

Amendment 91-148

Section 91.50(a), as adopted by Amendment 91-148 (43 FR 10339; March 13, 1978), provided that after April 12, 1981, with certain exceptions, no person may operate a transport category airplane equipped with a flight instrument pitot heating system unless the airplane is also equipped with an operable pitot heat indication system that complies with § 25.1326. Section 25.1326 requires that the indication provided must incorporate an amber light that is in clear view of a flight crewmember and must be designed to alert the flightcrew if either the pitot heating system is switched "off" or the pitot heating system is switched "on" and any pitot tube heating element is inoperative. All flight operations conducted with transport category airplanes must meet this requirement regardless of the type of operation being conducted.

Petition for Rulemaking by National Business Aircraft Association (NBAA)

On January 26, 1979, the NBAA petitioned the FAA to amend the Federal Aviation Regulations (FAR) to require that only transport category airplanes operated under Part 121, 123, or 135 meet the requirement to have an operable pitot heat indication system.

A summary of the NBAA's petition was published in the *Federal Register* on October 18, 1979 (44 FR 60107), and no comments were received. The FAA included the petition verbatim in Notice 80-27 to provide the public with all statements submitted by the petitioner in support of its petition.

To allow time to consider fully the NBAA petition, in Amendment 91-172 (46 FR 19; January 2, 1981) the FAA suspended the April 12, 1981, compliance date contained in

Amendment 91-148 for operators of transport category airplanes used in general aviation operations under Part 91.

Description of Notice 80-27

Notice 80-27 proposed to exclude general aviation operators of transport category airplanes operating under Part 91 from the operating requirement to install pitot heat indication systems to indicate to the flightcrew when the pitot heating system is not operating. The requirement was to be retained for commercial, air carrier, travel club, and air taxi operators of transport category airplanes. The proposal was in response to a petition from the NBAA which stated, in essence, that the cost of a pitot heat indication system is not justified for general aviation operators.

Notice 80-27 proposed a new section, § 125.122, for the pitot heat indication system requirement in Part 125. This has been changed to § 125.206, which appropriately places the requirement in Subpart F—Instrument and Equipment Requirements.

Discussion of Comments

The FAA received 21 public comments in response to Notice 80-27. A majority of commenters, all of whom operate aircraft under Part 91 only, support the proposal. They agree the proposal would provide financial relief from an unnecessary requirement for general aviation, inasmuch as the cost associated with installing a pitot heat indication system cannot be justified by a proven need for such a warning system. One such commenter states, for example, that in almost 19 years of service experience, his company has never experienced a failure of the pitot heating system on any of the company's aircraft. Similarly, the NBAA contends that existing training in the handling of emergency situations such as instrument failure and recognition of that failure, use of checklists, and cross-checking of instruments provide an equivalent level of safety to that provided by the proposal and that the corporate executive fleet safety record bears this out. The NBAA states that, to the best of its knowledge, there has never been a business aircraft accident attributable to pitot heating system failure.

The FAA, in its study of reports of airplane accidents which have occurred over a period from January 1, 1976, through May 28, 1981, finds no evidence that refutes the NBAA's statement that there is no record of any business or corporate (general aviation) transport category aircraft accident that is attributable to pitot heating system failure. The FAA does not suggest here that general aviation operations are less susceptible than operations conducted under Part 121, 123, 125, or 135 to the problems at which Amendment 91-148 is directed. However, where these operations are concerned, the FAA imposes stricter safety standards than are imposed for general aviation operations under Part 91. Since the operating experience of general aviation operators does not support the need to install a pitot heat indication system, the FAA concludes that the general aviation operator should be relieved of the cost burden associated with installing such a system.

Several commenters oppose the proposal. Some state that the requirement for installing a pitot heat indication system should be retained for Part 91 operations as well as for Part 121, 123, 125, and 135 operations; others state that the requirement should be rescinded for Part 121, 123, 125, and 135 operations as well as for Part 91 operations. Several such commenters state that the requirement for installing a pitot heat indication system should apply to all operations they conduct. They believe that safety standards should be the same for operations conducted under Part 91 as for those conducted under Part 121, 123, 125, or 135, and that the cost of installing a pitot heat indication system would not be prohibitive. An airline pilot's union, in its comment, supports the need for a pitot heat indication system in Part 91 operations because it believes that general aviation transport category airplanes are high-performance aircraft subject to precisely the same hazards as commercial transport category aircraft. This same commenter also implies that the installation costs for such a warning system would not be prohibitive. Another commenter questions the need for installing a pitot heat indication system in Part 135 operations, stating that such a warning system cannot substitute for professionalism in the flightcrew, while another commenter states that in aircraft operated under Part 125 (which may be operated for compensation or hire), the warning system should be an optional item.

The safety standards should not be the same for Part 91 operations as for operations conducted under Part 121, 123, 125, or 135. As stated earlier, where these operations are concerned, the FAA imposes stricter safety standards. In the absence of a record of any general aviation transport category airplane accident attributable to a pitot heating system failure, the cost of compliance with the pitot heat indication system requirement is not justified for general aviation operations conducted under Part 91. However, since air carriers conduct their operations with the highest level of safety and since Part 125 operators may receive compensation for their operations, the FAA imposes stricter standards on such operators. Therefore, the requirement for installing a pitot heat indication system for operations conducted under Part 121, 123, 125, or 135 is warranted. As stated in Amendment 91-148, the addition of a pitot heat indication system, while not guaranteeing against human error, will provide additional assurance that pilots will become aware as early as possible of a potentially dangerous situation.

One commenter suggests that the proposal be revised to allow the use of alternate indicating systems. This was not proposed in Notice 80-27 and cannot be considered as part of this rulemaking proceeding. Similarly, the commenter's point concerning the need for static port heaters is not part of this rulemaking proceeding.

A general aviation manufacturer's association, in its comment, recommends a rule change that would limit the application of § 25.1326, which requires installation of a pitot heat indication system in transport category airplanes, to airplanes used in commercial, air taxi, air travel club, and air carrier operations. This amendment of § 25.1326 was also proposed by the NBAA in its petition. Such a change was not proposed by the FAA in Notice 80-27. Additionally, no justification was offered by the NBAA for deleting the Part 25 requirement which applies to airplanes whose application for type certificate is made after April 11, 1978. Production of these airplanes will not occur until well in the future. Similarly, the manufacturer's association did not address this aspect in suggesting deletion of this Part 25 requirement.

These amendments do not relieve the operators of those transport category airplanes whose basis for certification includes § 25.1326 from the requirement to install a pitot heat indication system. Section 25.1326 applies to airplanes whose application for type certificate is made after April 11, 1978; however, a number of applications for type certificates were made before that date, and the applicants elected or were required under § 21.17 to include the provisions of § 25.1326 in their basis for certification. Some examples of airplanes required to have a pitot heat indication system as part of their basic design approval include the Boeing 757, the Boeing 767, and the Learjet models 54, 55, and 56.

Regulatory Evaluation

The FAA conducted a regulatory evaluation which is included in the regulatory docket for this action. The FAA determined that there is no cost impact on Part 91, 121, 123, 125, or 135 operators of transport category airplanes and only a minimal to negligible cost impact on the Federal Government. Specifically, this rule provides relief to Part 91 operators of certain transport category airplanes manufactured under a type certificate for which application was made before April 12, 1978, by eliminating the requirement to install pitot heat indication systems and imposes no new requirements on such operators. This rule imposes no new requirements on Part 121, 123, 125, or 135 operators. The requirement imposed by § 91.50 to airplanes operated under Parts 121, 123, 125, and 135 remains unchanged although the requirement for installing a pitot heat indication system is now listed separately in Parts 121, 125, and 135. The Federal Government will incur minimal to negligible costs in this revision of Part 91, which is considered to be part of the FAA's ongoing program to revise regulations.

Benefits

Implementing this rule provides benefits in terms of cost savings to Part 91 operators of transport category airplanes. It relieves such operators from the requirement to install pitot heat indication systems in their airplanes. During 1982, which is assumed to be the first effective year of the regulation, FAA estimates equipment, maintenance, installation, and downtime cost savings of at least $7.6 million to $10.9 million for operators of approximately 4,700 Part 91 airplanes. Further, cost savings to Part 91 operators of transport category airplanes of $1.0 million to $1.2 million each year during 1983–1985 are expected. Cost savings will be less during 1983 through 1985 than in 1982 because of the projected limited number of new production Part 91-operated transport category airplanes and because installation of the equipment could be performed during airplane assembly, thereby significantly reducing the costs. The FAA notes again that § 25.1326 requires a pitot heat indication system on those airplanes for which a type certificate application was made after April 11, 1978.

Accordingly, the benefits of this regulation outweigh the costs.

ADOPTION OF THE AMENDMENT

Accordingly, Parts 91, 121, 125, and 135 of the Federal Aviation Regulations (CFR Parts 91, 121, 125, and 135) are amended effective September 30, 1981.

(Secs. 313(a), 601, 602, 604, and 607 of the Federal Aviation Act of 1958, as amended (49 U.S.C. 1354(a), 1421, 1422, 1424, and 1427); and Sec. 6(c), of the Department of Transportation Act (49 U.S.C. 1655(c)).

NOTE: This document relieves a substantial segment of the aviation community of a cost burden and does not impose any additional burden on any person. Therefore, the Federal Aviation Administration has determined that this document involves a regulation which is not a major rule under Executive Order 12291 or a significant regulation under the DOT Regulatory Policies and Procedures (44 FR 11034; February 26, 1979). A copy of the final evaluation prepared for this action is contained in the regulatory docket. A copy of it may be obtained by contacting the person identified under the caption "FOR FURTHER INFORMATION CONTACT." It has been determined further that the amendment will not have a significant impact on a substantial number of small entities under the criteria of the Regulatory Flexibility Act since it is relieving in nature.

Amendment 135-18

Elimination of Certain Personnel, Manual, and Training Requirements for Corporate One-Pilot Operations and Delegation of Authority for Management Deviation Requests

Adopted: July 2, 1982 **Effective: August 2, 1982**

(Published in 47 FR 33394, August 2, 1982)

SUMMARY: This amendment eliminates regulations concerning manual requirements, management personnel required, pilot and flight crewmember training programs, and crewmember initial and recurrent training requirements where the certificate holder is a corporation or other legal entity which uses only one pilot. It also transfers the authority to act on requests for deviation from the Director of Flight Operations or the Director of Airworthiness to regional Flight Standards Divisions in matters concerning management personnel qualifications. Processing requests for deviations creates an economic burden for the certificate holder. This amendment reduces corporate costs and time required to process requests for deviations by eliminating certain personnel, manual, and training requirements when the certificate holder is a corporation or other legal entity which uses only one pilot. Therefore, this amendment is consistent with Executive Order 12291, the Regulatory Flexibility Act, and the Paperwork Reduction Act. It relieves burdens on small businesses without derogating safety.

Comments must be received on or before September 2, 1982.

ADDRESSES: Send comments on the rule in duplicate to: Federal Aviation Administration, Office of the Chief Counsel, Attn: Rules Docket (AGS-204), Docket No. 23229, 800 Independence Avenue, SW., Washington, D.C. 20591; or deliver comments in duplicate to: FAA Rules Docket, Room 916, 800 Independence Avenue, SW., Washington, D.C. 20591. Comments may be examined in the Rules Docket, weekdays except Federal holidays, between 8:30 a.m. and 5 p.m.

FOR FURTHER INFORMATION CONTACT: David W. Kress, Computer and Air Taxi Branch (AFO-250), Air Transportation Division, Office of Flight Operations, Federal Aviation Administration, 800 Independence Avenue, SW., Washington, D.C. 20591 telephone (202) 426-8086.

SUPPLEMENTARY INFORMATION:

Background

For many years, the FAA has regulated air taxi operators under Part 135 of the Federal Aviation Regulations. Those operators are air carriers and typically are relatively small business enterprises which employ few persons and use few aircraft. Of course, there are exceptions, such as commuter air carriers, which have experienced substantial growth in recent years to the point where they have significant numbers of employees and operate small fleets of aircraft. In the main, the average air taxi operator is a small-scope operation.

Many air taxi operators use only one pilot. In the case of an individual proprietor, that person not only is the certificate holder but also is the only pilot. There also are many air taxi operators, which are corporations or another form of legal entity, using only one pilot. Commencing at least as far back as 1969, by regulatory exception the individual proprietor who serves as the only pilot has not been required to prepare manuals or training programs. In addition, at least since 1969, the requirement for a manual has included a deviation authority provision for operators other than the individual operator serving as the only pilot. Deviation authority is a means for all or part of the manual requirement to be waived by the FAA based upon the limited size of the particular operation.

In 1978, Part 135 was substantially revised (new Part 135; 43 FR 46742; October 10, 1978). Manual and training program requirements were retained in new Part 135, and the regulatory exception for individual proprietor certificate holders serving as the only pilot was retained. Provisions for deviation from the manual requirement for other limited-scope operations were also retained, and similar authority was added with respect to training prgram requirements. Rules were added which required certain management personnel positions and qualifications for all operators except the individual proprietor certificate holder serving as the only pilot. Provision was made for deviation from the management personnel requirements if the certificate holder could show that it could perform its operations safely under the direction of fewer or different categories of management personnel. Deviations from the qualifications required of management personnel were permitted if it could be established that the person had aeronautical experience equivalent to the requirements specified in the rule. Manual, management personnel and qualifications, and training program requirements are contained in §§ 135.21, 135.37, 135.39, and 135.341 respectively.

Under the current regulations, deviations from the manual, training program, and management personnel requirements are handled by the FAA certificate-holding office. Deviations from the qualifications required of management personnel are handled in the FAA's Washington headquarters. The FAA has issued many deviations since 1969 in the case of manual requirements, and since 1978 in the case of training program and management personnel requirements. Most of these deviations were issued to corporate or other legal entity certificate holders which use only one pilot. The operations which use only one pilot typically use only one aircraft, and it has a type certificated seating capacity of nine passengers or less. Those operators have few employees. Because of the small size of those operators, they make arrangements with appropriate FAA-approved facilities or appropriately rated maintenance personnel for performance of maintenance required by Part 135. In the administration of the deviation authority provisions relating to manuals, training programs, and management personnel requirements, the FAA gained extensive operating experience with the corporate or other legal entity operator which uses only one pilot. With respect to these requirements, this operating experience has established that there is no significant difference between the operation in which the individual proprietor certificate holder is the only pilot and the operation in which a corporate or other legal entity certificate holder uses only one pilot. Therefore, the FAA has decided to treat those one-pilot, small-business operations uniformly by eliminating distinctions based upon the nature of the legal entity holding the air taxi certificate. Thus, by regulatory exception, any certificate holder using only one pilot will be relieved of the requirements to have a manual, a training program, and management personnel. Considering the operating experience gained in the numerous grants of deviation from these requirements, the FAA is convinced that no reduction in safety will result from this amendment.

Certificate holders using more than one pilot will continue to be required by regulation to have manuals, training programs, and management personnel with specific qualifications. Deviation authority for those operators will continue to be available under the circumstances specified in the rules.

Since the adoption of new Part 135 in 1978, deviations from the stated qualifications for management personnel have been handled at FAA's Washington headquarters. Authority was not delegated to the field offices at that time because new Part 135 required recertification of approximately 4,000 air taxi operators. It was deemed important to control deviation requests from management personnel qualification requirements from Washington until the recertification phase became complete, and administration of new Part 135 became routinely established.

Agency personnel have acquired substantial expertise in the administration of new Part 135. Consistent with the agency's emphasis on decentralization of functions and reduction of paperwork and processing time burdens, the agency has decided to delegate deviation authority for management personnel qualification requirements to the Flight Standards Division Chiefs located in the respective regional offices. This will reduce the processing time for each deviation request by approximately 2 weeks. The FAA workload will be reduced, and the needs of air taxi certificate holders will be served more promptly.

Description of Specific Regulatory Changes

Section 135.21 Manual requirements.

Section 135.37 Management personnel required.

Section 135.341 Pilot and flight attendant crewmember training programs.

Paragraph (a) of each of these sections contains the regulatory exception "other than one who is the only pilot used in the certificate holder's operations." This exception applies to individual proprietor certificate holders serving as the only pilot in their operations. In order to revise this exception to encompass a corporation or other legal entity which uses only one pilot, the exception in each section is revised to read "other than one who uses only one pilot in the certificate holder's operations."

Section 135.343 Crewmember initial and recurrent training requirements.

The last sentence of this section is a regulatory exception which conforms to the individual proprietor single-pilot exception in §§ 135.21, 135.37, and 135.341. It reads, "This section does not apply to a certificate holder who is the only pilot used in the certificate holder's operation." To conform to the revised regulatory exceptions in §§ 135,21, 135.37, and 135.341, this sentence is revised to read, "This section does not apply to a certificate holder that uses only one pilot in the certificate holder's operations."

The effect of these changes to §§ 135.21, 135.37, 135.341, and 135.343 is to revise the regulatory exceptions for one-pilot operations to include all one-pilot operations without distinction based upon the legal nature of the business firm under which the business is operated. In effect, these changes codify the general practice followed by the FAA in granting deviations from the manual, management personnel, and training program requirements in Part 135 to one-pilot operations. These changes will eliminate the paperwork burden on one-pilot certificate holders by eliminating the need to apply for deviations. Similarly, the paperwork and processing burdens on the FAA will be eliminated.

Section 135.39 Management personnel qualifications.

Paragraph (d) of this section provides authority for deviations from management personnel qualification standards. At the present time, these deviations may only be granted at the FAA's Washington headquarters. To change the delegation of deviation authority from FAA's Washington headquarters to the Flight Standards Division Chiefs in the respective FAA regional offices, the second and third sentences are deleted, and the following sentence is added: "The Chief of the Flight Standards Division in the region of the certificate-holding district office may authorize a deviation for the director of operations, chief pilot, and the director of maintenance."

FAA delegation of authority for administering deviation authority under this section is changed. It will reduce the FAA's paperwork burden and the time required to process these deviation requests. It will improve the agency's service to air taxi operators.

Justification for Immediate Adoption and Effectiveness

The changes which expand the existing regulatory exceptions relating to individual proprietorship one-pilot operations to all one-pilot operations have the effect of codifying the agency's general practice of granting deviations from the manual, training program, and management personnel requirements to such operators. Delegating deviation authority for management personnel qualifications from Washington headquarters to the various FAA regional offices is a change in administrative delegation. This amendment, therefore, is a minor amendment, and I find that notice and public procedure are unnecessary. In addition, since this amendment relieves restrictions, I find that good cause exists for making this amendment effective in less than 30 days. However, interested persons are invited to submit such comments as they may desire regarding this amendment. Communications should identify the docket number and be submitted in duplicate to the address specified above. All communications received on or before September 2, 1982, will be considered by the Administrator, and this amendment may be changed in light of the comments received. All comments received will be available, both before and after the closing date for comments, in the Rules Docket for examination by interested persons.

Commenters wishing the FAA to acknowledge receipt of their comments must submit with those comments a self-addressed, stamped postcard on which the following statement is made: "Comments to Docket No. 23229." The postcard will be date/time stamped and returned to the commenter.

Discussion of Impact

This amendment eliminates regulations concerning manual requirements, management personnel required, pilot and flight attendant crewmember training programs, and crewmember initial and recurrent training requirements for corporations or other legal entities which use only one pilot. Additionally, this amendment transfers the authority to grant deviations from management personnel qualification requirements from Washington headquarters to the regions. After an informal assessment of the potential cost aspects of the rule, the FAA has determined that there are no apparent direct or indirect costs associated with making the change to the regulations. Where there are apparent benefits, they are not readily quantifiable since information required to quantify benefits is not available to the FAA. It is apparent that the benefits outweigh any costs associated with changing the present regulations.

The Amendment

Accordingly, Part 135 of the Federal Aviation Regulations (14 CFR Part 135) is amended effective August 2, 1982.

NOTE: The FAA has determined that this amendment provides rule changes which are relaxatory in nature and impose no additional burden on any person. One of the amendments reduces processing time by approximately 2 weeks for certain deviation requests, and the other amendments should eliminate approximately 240 requests for deviations from corporations or other legal entities who use only one pilot. Accordingly, the FAA has determined that this amendment is not major under Executive Order 12291 and is not significant under DOT Regulatory Policies and Procedures (44 FR 11034; February 26, 1979). For the reasons discussed above, the anticipated economic impact is so minimal that no regulatory evaluation is necessary.

(Sections 313, 314, and 601 through 610, Federal Aviation Act of 1958, as amended (49 U.S.C. 1354, 1355, and 1421 through 1430); Section 6(c) of the Department of Transportation Act (49 U.S.C. 1655(c).)

Amendment 135-19

Flight Time Limitations and Rest Requirements

Adopted: June 3, 1985 **Effective: October 1, 1985**

(Published in 50 FR 29306, July 18,1985)

SUMMARY: This final rule amends flight time limitations and rest requirements for flight crewmembers engaged in air transportation. The rule is based on recommendations of a Regulatory Negotiation Advisory Committee composed of persons who represent the interests affected by the flight time rules. The rule clarifies certain requirements that have had voluminous interpretations and updates certain requirements in relation to current operating conditions.

Certificate holder may comply on the effective date or on the first day of any calendar month after the effective date or on the final compliance date of this rule.

Final compliance date: October 1, 1986.

FOR FURTHER INFORMATION CONTACT: Larry P. Bedore, Project Development Branch, (AFO-240), Air Transportation Division, Office of Flight Operations, Federal Aviation Administration, 800 Independence Avenue, SW., Washington, D.C. 20591; telephone (202) 426-8096.

SUPPLEMENTARY INFORMATION:

BACKGROUND

Air crewmember fatigue is a fundamental factor of flight safety. The flight time limitation rules regulate the number of flight hours a flight crewmember may be scheduled for in a year, month, week, and day and the frequency and length of rest periods that a flight crewmember must be given, in the interest of both individual and public safety. The flight time limitation rules that apply to major scheduled airlines—those most familiar to the traveling public—and to other airlines operating large transport category airplanes are contained in Part 121 of the Federal Aviation Regulations (FAR) (14 CFR Part 121). The flight time limitation rules that apply to the scheduled air carriers that operate airplanes of 30 or fewer seats and to air taxi operations are contained in Part 135 of the FAR (14 CFR Part 135).

The flight time limitation rules in both Parts 121 and 135 have remained virtually unchanged for the past 30 years despite significant changes in the aviation transportation industry. The most significant reasons for amending the rules are that— (1) rest requirements under Part 121 have been extremely complicated and have required thousands of pages of interpretation over the past 30 years; (2) rest requirements have been inflexible, preventing air carriers from adjusting schedules and resulting in a number of exemption requests; and (3) recent increases in short-duration, passenger-carrying operations (commonly called regional operations) have prompted recommendations (reflected in the Airline Deregulation Act of 1978) that Part 135 rules provide a level of safety that is, to the maximum feasible extent, equivalent to the level of safety provided by Part 121 rules.

The FAA has recognized for several years that the flight time rules need to be clarified and updated and on several occasions has proposed rules to correct problems. Because of the complexity of the rules and the variety of interested persons, none of the proposals adequately resolved the problems to the satisfaction of the affected parties. The FAA, therefore, initiated an innovative approach called Regulation by Negotiation. The FAA created an Advisory Committee under the Federal Advisory Committee Act. The committee included persons representing flight crewmembers, air carriers, air taxis, helicopter operators, the FAA, and a consumer interest group. Initially, the committee met on seven occasions for a total of 16 days. It gave serious consideration to various proposals and justifications submitted by its members and succeeded in narrowing the differences among interested parties and in reaching substantial agreement on some issues.

As a result of the committee's deliberations, the FAA drafted a Notice of Proposed Rulemaking (Notice 84-3), which reflected the committee's discussion of and agreements on certain issues, in addition to identifying five issues which were not resolved by the committee at the time of publication (49 FR 12136), March 28, 1984). The FAA and the Advisory Committee reviewed comments received on the NPRM, and on September 11, 1984, the Advisory Committee convened to discuss issues which needed to be addressed in the final rule. The final rule is the result of FAA consideration of all comments on the NPRM and of the final deliberations of the Advisory Committee.

The Advisory Committee met under the direction of Nicholas Fidandis who acted as convener/mediator. The regulatory negotiation process was supported by the Office of the Secretary of Transportation, the Vice President's Office, The Office of Management and Budget, and the Administrative Conference of the United States. The support of those offices was appreciated. In the obviously complex and controversial area of flight and duty time limitations, the regulatory negotiation process was essential in achieving the highly successful result which is apparent in these amendments. It allowed a thorough discussion of all issues with representatives of all interests. At a minimum, the process acted to substantially narrow the number of differences between the parties and, even where differences remained, acted to lessen the contentiousness of the parties regarding those differences. The process also highlighted for the FAA those areas in which a compromise position was possible that the parties could accept if they could not concur with it publicly. The end result, in the FAA's view, is a final rule that accomplishes the objectives of the rulemaking and addresses the concerns expressed by all parties. An additional benefit is that the parties were made more sensitive to the competing interests of the other parties. As a result of this process, a better compliance attitude should result. The FAA wishes to express its appreciation for the cooperation and untiring efforts of all those who participated in the process either as committee members or commenters.

INTENT OF THE RULE

The Notice of Intent for the formation of the Advisory Committee (48 FR 21339, May 12, 1983) contained a lengthy list of issues that could be addressed by the committee. However, as the committee began its deliberations, it became apparent that not all the issues could be resolved in a reasonable time. Therefore, the committee began to focus on the following major objectives:

- To address the series-of-flights problem in Part 121, thereby resolving many interpretation problems;
- To correct an inadequacy in current Part 121, domestic air carriers rules, for flight crewmembers scheduled to fly 8 hours or less in 24 consecutive hours (current rest requirements apply only if more than 8 hours is scheduled) and to allow greater scheduling flexibility;
- To upgrade the requirements for all operations in Part 135, particularly scheduled operations; and
- To incorporate into the rule certain exemptions that have wide applicability.

Both the proposed rule and the final rule have kept within the limits of the FAA's intention and the deliberations of the committee.

The rule accomplishes the intended objectives in the following way:

- It establishes flexible daily rest requirements in Part 121 for domestic operations and in § 135.265 for scheduled operations, in accordance with the number of scheduled flight hours.
- It establishes cumulative weekly (every 7 days), monthly, and annual flight time limits for Part 135 to assure a level of safety, to the maximum feasible extent, equivalent to that under Part 121;
- It codifies in Part 135 several exemptions: the reduction of a 10-hour rest under certain conditions, the extension of flight time with augmented crews, and the special limitations needed for helicopter medical emergency services.

COMMENTS ON THE PROPOSED RULE

During the 45-day comment period, the FAA received over 140 comments in response to Notice 84-3. The comments represented the views of individuals, airline organizations, labor organizations, research institutions, public interest groups, and other government agencies. Most comments expressed agreement with the need for improving the regulations and commended the FAA for the rulemaking effort. Airline organizations generally favored the proposal while some labor organizations, research institutions, public interest groups, individual pilots, and the National Transportation Safety Board expressed reservations about certain proposed changes. In general, the tone and the length of the comments received indicated that the proposed rule was far more acceptable than the last several FAA proposals.

A number of commenters stated that the 45-day comment period was not long enough for them to respond as fully as they would have liked. According to certain of these comments, one group particularly affected by the 45-day comment time was flight crewmembers who are not represented by unions and, therefore, were not formally represented at the Advisory Committee sessions. According to these comments, because of the busy work schedule of these flight crewmembers and their lack of an oganizational unit to represent their interests, 45-days in which to comment was not sufficient. In addition, comments pointed out that the proposed rule was highly complex and that a comment period of 90 days should have been given after the negotiation meetings to allow for a full consideration of the complex proposal. In response to these comments, the FAA points out that three factors determined the length of the comment period. First, all of the Advisory Committee meetings were open to the public. Interested parties, in addition to the representatives who served on the committee, were given an opportunity to express their concerns to the committee. A number of pilots, not represented by organizations on the committee, made oral presentations to the committee at the September 11, 1984, meeting, which occurred after the close of the comment period. The FAA considered these presentations, as well as the written comments submitted by non-unionized pilots, in the drafting of the final rule. Second, the majority of the parties most affected by the rulemaking were represented on the committee. Their views were heard during the negotiating sessions, and their written comments were, to a large extent, statements of their negotiating positions. Third, the scope of the rulemaking had been narrowed from the Notice of Intent in order to correct as quickly as possible those problems most in need of resolution. Thus, the issues for comment were relatively few. Given all of the above factors a 45-day comment period was considered sufficient. Comments which were received after the comment period closed were considered under 14 CFR § 11.47 which provides that late filed comments are considered, in so far as possible, without incurring expense or delay.

Most of the comments received fall into one of three categories: (1) those which focus on particualar provisions of the rule, such as the length of minimum rest and flight time limits between rests; (2) those which indicate a misunderstanding about certain provisions of the rule, such as the look-back provisions for required rest based on the amount of scheduled flight time during a preceding 24-hour period; and (3) those which focus on issues that are beyond the scope of this rulemaking. Comments that focus on particular provisions or that indicate a misunderstanding about certain provisions are discussed under the appropriate headings. Comments which raise issues beyond the scope of this rulemaking are discussed below.

A number of comments objected to the rule on the grounds that it does not amend flag and supplemental air carrier rules which have problems similar to those of domestic operations rules. In answer, the objective of revising the flag and supplemental rules was considered by the Advisory Committee, and some committee proposals included flag or supplemental revisions. However, because of the overriding importance of clarifying the domestic rules, revisions to flag and supplemental rules are not addressed at this time.

A number of comments objected to the proposed rule because it does not take into account recent bio-medical research or factors affecting pilot fatigue. Some of these comments include copies of bio-medical studies. A representative of the Air Line Pilots Association also made a presentation to the committee on the status of the relevant scientific research. Again, because of the overriding importance of clarifying and simplifying the current rules, broader revisions which could alter the overall structure of the FAR on flight time limits and rest requirements could not be considered at this time. The FAA intends to continue its consideration of fatigue studies and is awaiting completion of the National Aeronautics and Space Administration's study on the operational significance of pilot fatigue and circadian desynchronosis. The study report is expected to be available for review in the latter part of 1986. If the report establishes a quantifiable relationship between fatigue and job performance and identifies specific criteria which support an amendment of the flight time limitations and rest requirements, the FAA would then consider additional rulemaking. Presently, the rules adopted by these amendments protect against acute (short-term) fatigue by requiring specific rest periods in the 24 hours preceding the completion of scheduled flight time and protect against chronic or long-term fatigue by setting cumulative flight time limits.

A number of commenters pointed out that the proposed rule does not cover flight attendants and that regulations should be enacted that would cover flight attendants. The issue of including flight attendants is beyond the scope of this rulemaking. The Association of Flight Attendants presented a Petition for Rulemaking to the FAA on this issue, a summary of which was published in the *Federal Register* (50 FR 6185, February 14, 1985). Flight and duty time for flight attendants will be considered by the FAA as a separate issue.

One concern raised by a number of commenters is that the current rule and the proposed rule regulate only flight time and rest periods but do not regulate duty time. According to commenters, the proposed rule should specifically limit the duty period to protect flight crewmembers from fatigue. Again, the FAA wishes to emphasize that these changes to Part 121 focused on clarification and simplification with the one exception of requiring a rest for less than 8 hours of flight time. To institute a limit on duty, beyond the inherent limits necessitated by the required rest, would be outside the scope of this rulemaking. However, adequate and timely rest periods effectively limit the length of duty periods.

THE RULE—PART 121 AND 135

General Issues

Certain important issues, some of which were identified as unresolved issues in the proposed rule and some of which arise from the comments to the proposed rule, involve changes in both Parts 121 and 135. These issues and comments will be discussed in the following paragraphs. The general issues include: (1) applicability, (2) cumulative flight time limits, (3) daily flight time limits, (4) daily rest requirements, (5) actural flight time vs. scheduled flight time, (6) flight-crewmember responsibility, and (7) dual operations.

Specific changes to the sections involved and comments about these changes are discussed in the *Section by Section* division of this preamble.

Applicability

The dividing line between Part 121 and Part 135 is provided by Special Federal Aviation Regulation (SFAR) 38-2 (50 FR 23941; June 7, 1985). Operations of aircraft with more than 30 passenger seats or a payload capacity of more than 7,500 pounds must be conducted under Part 121. Operations of aircraft with a lesser seating configuration or payload capacity must be conducted under Part 135. This rule continues the 30 passenger/7,500 pound payload distinction as the major dividing line between Part 121 and Part 135, and it makes some additional distinctions within Part 135.

Part 135 contains two sets of cumulative flight time limits and daily rest requirements, one for scheduled operations and another for unscheduled operations. Scheduled operations that must be conducted under § 135.265 are defined in § 135.261(b) as passenger-carrying operations that are conducted in accordance with a published schedule of at least five round trips per week on at least one route between two or more points.

The schedule must include dates or times (or both) and must be openly advertised or otherwise made available to the public. All other Part 135 certificate holders are given the option of complying with the rules applicable to scheduled operations in § 135.265 if they obtain an amendment to their operations specifications.

Unscheduled operations, except for helicopter hospital emergency medical evacuation service (HEMES) operations, are conducted under §§ 135.267 and 135.269. These operations include unscheduled air taxi operations and commercial operations. The rule also permits Part 135 scheduled passenger and cargo-carrying operations in Alaska to be conducted under these sections. Helicopter hospital emergency medical evacuation services (HEMES) are conducted under § 135.271.

While this rulemaking clarifies Part 121 rest requirements, it also upgrades the requirements for all Part 135 operations, particularly scheduled operations. By separating Part 135 into scheduled and unscheduled operations, the FAA is able to establish acceptable cumulative flight time limits for operations that under current rules have only daily flight time limits.

Cumulative Flight Time Limits

Cumulative flight time limts, that is weekly, monthly, and annual limits for Part 121 domestic air carrier operations and Part 135 scheduled operations, and quarterly, biquarterly and annual limits for Part 135 unscheduled operations, are meant to protect the flight crewmember against chronic or long-term fatigue. Weekly limits in the context of this preamble refer to limits over any 7 consecutive days, not a calendar week. A quarter refers to the four periods of 3 months each, beginning in January, April, July, and October.

The annual, monthly, and weekly flight time limits for Part 121 domestic operations will remain the same as in the current rule: 1,000 hours in any calendar year, 100 hours in any calendar month, and 30 hours in any 7 consecutive days (§ 121.471(a)). Newly imposed annual, monthly, and weekly flight time limits for Part 135 scheduled operations will be slightly less restrictive: 1,200 hours in any calendar year, 120 hours in any calendar month, and 34 hours in any 7 consecutive days (§ 135.265(a)). The new quarterly, biquarterly, and annual limits for Part 135 unscheduled operations will be the least restrictive: 1,400 hours in any calendar year, 800 hours in any 2 consecutive calendar quarters, and 500 hours in any calendar quarter (§§ 135.267, 135.269, and 135.271).

One commenter objected to the Part 121 monthly flight time limit of 100 hours in any calendar month on the basis that Decision 83, which was incorporated into law, is still in force. Decision 83 was an announcement of the National Labor Board on May 10, 1934, which stated that 85 hours a month would be the flight time limitation for pilots of five airline companies involved in a dispute. Decision 83 was incorporated in Federal law in the Civil Aeronautics Act of 1938, and reenacted in both the Federal Aviation Act of 1958 and the Airline Deregulation Act of 1978. Decision 83 is incorporated into Title IV of the Federal Aviation Act, which governs economic regulation, not into Title VI, which affects safety regulations. The economic decisions in Decision 83 have never carried over to safety rules such as the monthly flight time limit.

A number of commenters objected to the less restrictive limits for Part 135 operators on the basis that the FAA should require the same flight time limits as Part 121 domestic operations for all Part 135 operations. These commenters reasoned that what is considered safe for one type of operation should be considered safe for all. Certain factors, however, were considered in establishing the new Part 135 flight time limts. Part 121 limits for large aircraft have been established for more than 30 years. The large air carriers are accustomed to operating within these restrictions and have maintained a high level of safety. Part 135 scheduled and unscheduled operators have had no cumulative weekly, monthly, or annual flight time limits, only daily limits of 10 hours for a two-pilot crew and 8 hours for a one-pilot crew. Theoretically, the current rule allows a two-pilot crew to fly 70 hours of flight per week and 3,640 hours in 52 weeks. The new limits for both scheduled and unscheduled operations substantially reduce flight time in order to reduce fatigue and provide a level of safety equivalent to, to the maximum feasible extent, the level of safety in Part 121.

The Airline Deregulation Act of 1978 requires the Administrator to "impose requirements upon . . . commuter air carriers to assure that the level of safety provided to persons traveling on such commuter air carriers is, to the maximum feasible extent, equivalent to the level of safety provided to persons traveling"on Part 121 air carriers. The FAA's action in establishing, for the first time, weekly, monthly, and annual flight time limits for Part 135 scheduled operations is consistent with the "maximum feasible extent" requirement.

Thirty-seven commenters, primarily operators, a few pilots, and a state government, objected to the proposed limit of 32 hours of flight time in any 7 consecutive days in § 135.265(a). The claimed that the weekly limit would have a significant cost impact because of the additional bookkeeping requirements and the need to hire additional flight crewmembers. Examples from schedules submitted by operators as part of their comments showed that these operators were scheduling 1 or 2 hours of flight in excess of the proposed 32-hour weekly limit. Commenters also pointed out that during peak periods, seasonal operator would be forced to hire additional flight crewmembers. This would not only be costly to the operators but also to flight crewmembers who need the extra hours of flight time during peak seasons to compensate for wages lost during slack seasons. The commenters believed that from a safety standpoint a weekly limit is unnecessary; monthly and annual limits or only monthly limits are a sufficient safeguard against fatigue.

Based on these comments and considering that the new weekly flight time limit is considerably more restrictive than the old Part 135 limits, the FAA has decided to increase the weekly limit from the proposed 32 hours to 34 hours, which is within the range of weekly flight hour limitations discussed during the regulatory negotiation process. The increase should accommodate those air carriers who submitted schedules showing flight times in excess of 32 hours and should also increase flexibility for seasonal operators and crewmembers. However, the FAA is unwilling to eliminate the weekly flight time limitation.

The FAA points out that weekly, monthly, and annual limits work in conjunction with each other and with daily required rests and flight hour limitations between rests. For example, for Part 135 scheduled operators, an annual limit of 1,200 hours if divided by 12 months allows 100 flight hours a month. However, a Part 135 pilot could accumulate a maximum of 120 flight hours in a month if necessary. In the same way, the monthly limit of 120 hours if divided by 4 weeks allows for 30 flight hours each week. However, a Part 135 pilot could accumulate a maximum of 34 flight hours per week for the first 3 weeks, but could not exceed 18 flight hours during the remainder of the calendar month. Thus the weekly, monthly, and annual flight hour limits will provide more protection from acute and chronic fatique by significantly reducing the number of weekly, monthly, and annual flight hours permitted by the old rule. Therefore, the FAA believes that the weekly limit is a necessary component of the overall regulatory scheme for the prevention of fatigue of flight crewmembers engaged in scheduled operations, and that the benefits of the amendment outweigh the costs. The costs and benefits are discussed below under "Economic Evaluations".

A number of commenters pointed out that two earlier FAA proposals, Notice 78-3B and 82-4 (45 FR 55316, August 11, 1980 and 47 FR 10748, March 11, 1982) did not contain annual limits and that one of these proposals also did not contain weekly limits. In both cases, however, the concepts for the proposed rules differed from this proposal. In Notice 78-3B annual limits were dropped but monthly and weekly limits included both flight and duty hours. In Notice 82-4 the flight time rules were simplified across the board with a single monthly limit, and an 8-hour required rest for under 8 hours of flight time and a 10-hour required rest for over 8 hours of flight time. In light of comments on Notice 82-4 and the negotiations of the Advisory Committee, the FAA has determined that this final rule better serves the needs of the public, flight crewmembers, and operators. Those operators who will have additional costs connected with the weekly limit are reminded that they have an adequate time period to adjust their scheduling practices to the new weekly requirements.

A number of commenters favored the quarterly, biquarterly, and annual limits for Part 135 unscheduled operators. Two commenters objected to the limits for Part 135 unscheduled operations on the grounds that they appear potentially unsafe. One commenter pointed out that under the proposed limits, a flight crewmember could be scheduled to work a 14-hour duty day with 8 hours of flight time each day for 2 consecutive calendar months without an extended rest. Under these circumstances the flight crewmember would be within the limit of 500 hours within 1 calendar quarter and 800 hours within 2 consecutive calendar quarters. (§ 135.267(a)(1) and (2)).

The FAA recognizes that such a schedule would be allowed under the new rule. However, the quarterly limit has been set at 500 flight hours to allow for seasonal, unscheduled operations which provide an important transportation service to the public. In addition, certain safeguards are inherent in the rule. If a flight crewmember does fly 500 hours in one quarter, he or she cannot fly more than 300 hours in the quarter before nor in the quarter after. And a flight crewmember cannot fly more than 1,400 hours in the year. Also a flight crewmember must be given 13 rest periods of at least 24 consecutive hours in each quarter. If a pilot does fly 8 hours in a 14-hour duty period each day for 60 consecutive days, in the last 30 days of the quarter he or she can fly only 20 hours and must be given 13 rest periods of at least 24 consecutive hours. Although such a schedule is theoreticaly possible under the rule, it seems highly impractical. Finally, the rule also requires that each 14-hour duty period in this example be preceded and followed by 10 hour rest periods and that the daily flight limit of 8 hours for a single pilot and 10 hours for two-pilot crew cannot be exceeded without incurring a penalty of up to 16 hours of rest. Given the entire context of § 135.267, the flight crewmember will be adequately rested. This is in contrast to the current rule which allows a pilot to fly 8 to 10 hours a day for 7 days a week for 52 weeks.

The proposed rule distinguished a special category of Part 121 operators in § 121.471(h). Paragraph (h) established less restrictive weekly, monthly, and annual limits for operators of propeller-driven multiengine airplanes with a passenger seating configuration of 31 to 60 seats and a payload capacity range of 7,501 pounds to 18,000 pounds. The provision was based upon a proposal from the Regional Airlines Association (RAA) submitted to the Advisory Committee involved in the regulatory negotiations of the flight time limitation rules. The RAA orignally proposed establishing in Part 135 special flight time limits to apply to operations of multiengine propeller-driven airplanes with a maximum passenger seating configuration of 60 seats and a maximum payload capacity of 18,000 pounds. The present benchmark for Part 135 operations, as established in Special Federal Aviation Regulation 38 (now SFAR 38-2), is a maximum seating configuration of 30 seats and a maximum payload capacity of 7,500 pounds. The basic premise of the RAA's request was that the 30-seat benchmark is inappropriate for flight time rules. According to the RAA, short-duration, passenger-carrying operations using smaller aircraft (commonly known as regional operations), whether conducted under Part 135 or Part 121, are like each other and unlike the longer haul jet operations of the major airlines. Therefore, the RAA requested that those operations in aircraft up to 60 passenger seats follow the flight time rule appropriate to their type of operation.

The FAA's proposed rule (Notice 84-3) retained the 30-passenger, 7,500 pound payload distinction as the dividing line between Part 121 and Part 135 flight time rules. However, the FAA accommodated the RAA request by (1) proposing the same daily rest requirements and flight time limits between rests for Part 121 domestic air carrier operations and for Part 135 scheduled operations; and (2) proposing flight time limits, during any 7 days, calendar month or year, for Part 135 scheduled operations, which are less restrictive than those for Part 121 domestic air carrier operations (§ 121.471(a)). These less restrictive limits were incorporated in proposed § 121.471(h) as follows:

> (h) For operations of propeller driven multiengine airplanes having a passenger seating configuration of 31-60 seats and a payload capacity of 18,000 pounds or less, no air carrier may schedule any flight crewmember for flight time in scheduled air transportation or in other commercial flying if

that crewmember's total flight time in all commercial flying will exceed—

(1) 1,200 hours in any calendar year.
(2) 120 hours in any calendar month.
(3) 32 hours in any 7 consecutive days.
(4) 9 hours between rest periods. (Changed to "8 hours between rest periods" in this final rule.)

Thus, in effect, proposed paragraph (h) created a special aircraft size category in the Part 121 flight time limitations without changing the benchmark for Part 135 established in SFAR 38.

Proposed paragraph (h) was a controversial issue in the Advisory Committee negotiations and the Committee did not reach a consensus on the issue. While the FAA chose to include paragraph (h) in the NPRM, it stated the following reservation:

> Although the FAA has incorporated the RAA requests into this proposed rule, in view of objections to proposed paragraph (h) expressed at the Fedruary 14 Advisory Committee meeting, the FAA invites comments and statistics on this issue.

During the comment period, the FAA received a number of comments on paragraph (h). Of the 54 comments received on the subject, 27 favored including paragraph (h), while 27 opposed it. Most of the comments in favor of including paragraph (h) were from air carrier associations and individual air carriers who fly Part 121 operations or dual Part 121/135 operations. These comments supported the RAA's earlier position that regional operations are like each other and unlike other Part 121 or Part 135 operations. Some dual Part 121/135 operators pointed out that without paragraph (h) dual operators would have the expense of maintaining two sets of records on flight time limitations and rest requirements for operations that are essentially the same. However, recordkeeping is not that costly, expecially in light of the flexibility and other benefits that rule offers Part 121 and Part 135 scheduled operators. If it is of significant cost to keep dual records, it is not a new cost, and presumably is an anticipated cost when a Part 135 operator considers purchasing large aircraft. It is a cost that operators should take into account as part of that decision and is in no way a cost imposed by this rulemaking.

Most of the comments in opposition to paragraph (h) were from regional airline pilots who conduct operations under Part 121 and from organizations representing pilots. These comments stated that regional operations are actually more strenuous and more fatiguing than other Part 121 operations.

At the last Advisory Committee meeting on September 11, 1984, the issue of including paragraph (h) was not separately discussed as an issue by the committee members. However, several regional air carrier pilots made oral presentations to the committee in which they objected to less restrictive limits for short-duration, passenger-carrying operations. The chairman of the National Transportation Safety Board (NTSB) also made an oral presentation in which he objected to paragraph (h) as follows:

> The FAA has not presented any basis for the higher flight time limitations proposed for flight crewmembers of the category of aircraft addressed in proposed 121.471(h) over the limitations set forth in 121.471(a). The operation of propeller-driven smaller airplanes and those used for commuter operations are, by the very nature of their normal use, more demanding; they fly shorter leg segments, make more approaches into smaller airports having less sophisticated navigation aids, spend proportionately more time in high density terminal environments, and encounter more often the adverse weather conditions typical of lower altitudes. Moreover, flight crewmembers of these aircraft often have a higher duty time to flight time ratio which is not accounted for in the proposed regulations. In the Board's view, there is a complling rationale for imposing more restrictive flight time limitations on these flight crews. To allow less restrictive limitations, as proposed, will possibly jeopardize safety.

As emphasized in the NPRM, decisions in this final rule are the sole responsibility of the Administrator. Although the consesus recommendations of the Advisory Committee made a significant impact on the final rule, on this issue the Committee did not reach a consensus. Therefore, the FAA has made its own determination after considering NPRM 84-3 comments, final presentations, and the earlier deliberations. While the comments were numerically split, the FAA is impressed that the most persuasive comments oppose allowing less restrictive cumulative limits for certain Part 121 operations. The less restrictive weekly, monthly, and annual limits being adopted for Part 135 scheduled operations can be justified primarily on the grounds that present Part 135 operations are subject only to daily limits. However, Part 121 operations—including operations conducted by operators who began as Part 135 operators—have for over 30 years been subject to the 30 hour weekly, 100 hour monthly, and 1000 hour annual limits. The FAA concludes that it cannot ensure that the present level of safety would be maintained if it were to relax these limits for some Part 121 operations. Therefore, proposed § 121.471(h) has not been included in this final rule.

Daily Flight Time Limits—Part 121 and Part 135 Scheduled Operations

The daily flight time limits and rest requirements for Part 121 domestic operations and Part 135 scheduled operations are alike except that Part 135 scheduled operations have an additional daily flight time limit of 8 hours for a one-pilot crew. Under both Parts, an air carrier may nor schedule a flight crewmember for more than 8 hours of flight time between required rest periods. An 8 hour flight time limit between rests is similar to the current § 121.471(b) which limits flight time to 8 hours between rests by requiring that an intervening rest of twice the number of hours of flight time but not less than 8 hours be given at or before the completion of 8 hours of flight time in any given 24-hour period.

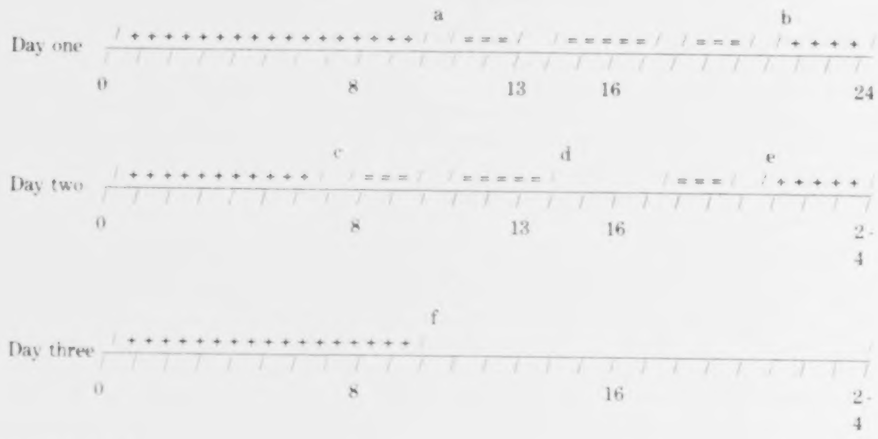
The proposed rule limited flight time to 9 hours between rest periods. A number of commenters objected to the 9-hour limit on the basis that 9 hours had not been discussed by the Advisory Committee before drafting the NPRM. The FAA proposed 9 hours as the limit between rest periods because several members stood firm on an 8-hour flight time limit in any 24 consecutive hours within a 10-hour required rest and other members stood firm on an 8-hour flight time limit with an 8-hour required intervening rest.

In order to gather additional information, in Notice 83-4 the FAA requested comments on how often the 9-hour cap would be reached, including the types of schedules contemplated. Only one commenter submitted specific, substantive comments on the 9-hour cap. This comment stated that current Part 121 requirements have so influenced marketing strategies and scheduling practices of carriers that carriers do not know and cannot hypothesize how often the 9-hour cap would be reached. However, flexibility to exceed 8 hours would likely offer benefits as certain markets, which involve turn-arounds on long stage lengths, could be efficiently served within a 9-hour cap. The FAA considered this information in conjunction with a number of comments submitted by pilots, pilot associations, and others who objected to the 9-hour cap because it would extend the duty day. The FAA concluded that the proposed 9-hour cap was of dubious benefit to long-haul operations because it could not accommodate many distant city pairs. Furthermore, the 9-hour cap might extend what is already a long duty period for flight crewmembers in short-haul operations. For short-haul, passenger carrying operations, 8 hours of flight time usually involves 12 to 14 hours of duty because of the number of flights and the time needed on the ground between flights. Extending the flight time limitation between rests beyond the 8 hours currently allowed by the domestic rules in Part 121 cannot be justified at this time, and would create inconsistencies with certain other Part 121 flight time limitations. Therefore, the FAA has decided that the final rule will limit scheduled flight time between required rest periods to a maximum of 8 hours.

A number of commenters apparently view the 8-hour cap as an 8-hour limit within any 24-hour period. It should be noted that the 8-hour cap of this rule and the 8-hour cap of the current rule are not flight time limits in a rolling 24-hour period. Rather, the 8-hour cap is a flight time limit between required rest periods. It is possible under both rules to fly in excess of 8 hours within a 24-hour period. (See Figure 1 for an example of operation under the new rule.)

Figure 1

LEGALLY SCHEDULED FLIGHT TIME IN EXCESS OF 8 HOURS DURING 24 CONSECUTIVE HOURS



/+/ Scheduled rest
/=/ Scheduled flight time

(a) At 0900 hours the flight crewmember is scheduled for duty after 24 hours rest.

(b) At 2100 hours the flight crewmember is scheduled to be released from duty after being scheduled for 7 hours of flight time.

(c) At 0600 hours (Day two), the flight crewmember reports for duty after a 9 hour reduced rest.

(d) At 1300 hours (Day two) the flight crewmember can look back on 10 hours of scheduled flight time in 24 consecutive hours.

(e) At 2100 hours (Day two, the flight crewmember is released from duty after 7 hours of scheduled flight to receive compensatory rest of a least 12 hours.

(f) At 0900 hours (Day three), the flight crewmember completes the compensatory rest.

Daily Rest Requirements—Part 121 and Part 135 Scheduled Operations

The new rest requirements under Part 121 and Part 135 scheduled rules resolve the series-of-flights problem in current Part 121 by replacing the intervening rest concept and the 16-hour rest with a daily rest requirement based on the number of flight hours scheduled in any 24-hour period. The new daily rest requirements apply when any amount of flight time is scheduled, thereby correcting the lack of rest requirements in current Part 121 for flight crewmembers who are scheduled for less than 8 hours of flight time in any 24-hour period. For both Part 121 and Part 135 scheduled operations for a 24 consecutive hour period, 9 consecutive hours of rest must be scheduled for less than 8 hours of flight time, 10 consecutive hours of rest for 8 or more but less than 9 hours of flight time, and 11 consecutive hours of rest for 9 or more hours of flight time.

To allow more flexibility than the current rule in scheduling or in adjusting scheduled rests in the event of late arrivals, the new rule provides for reducing a required rest as follows: a 9-hour rest can be reduced to 8 hours if 10 hours of rest is given at the flight crewmember's next scheduled rest; a 10-hour rest can be reduced to 8 hours of rest if 11 hours is given at the next scheduled rest; and an 11-hour rest can be reduced to 9 hours if 12 hours is given at the next scheduled rest. These reduced and compensatory rest periods are absolute and may not be further reduced under any circumstances.

It should be emphasized that the provisions for rest period reductions adopted herein provide substantially more flexibility for air carriers than is available under the current domestic rules. The change from the proposed 7½-hour reduced rest to an 8-hour reduced rest simplifies the regulation because the air carriers are accustomed to using an 8-hour rest period.

Scheduled Flight time hours during any 24-hour period	Minimum hours of rest		
	Normal	Reduced	Compensatory
<8	9	8	10
≥8 <9	10	8	11
≥9	11	9	12

NOTE: < means less than
≥ means equal to or greater than

The proposed rule allowed the 9-hour rest required for less than 8 hours of scheduled flight time to be reduced to 7½ hours provided a minimum of 10 hours rest is given at the next scheduled rest period. A large majority of the commenters who addressed this provision strongly opposed allowing a minimum rest period to the reduced to 7½ hours. The following excerpt from the comment of the Aviation Consumer Action Project (which was represented on the Committee) was typical of the anti-7½-hour minimum rest comments:

> It would seem more appropriate to limit the shrinkage, if at all, from nine hours to eight hours. An eight hour floor would seem more appropriate, particularly in the not unusual situation where the pilot lands late at night after a 'light' day of flying, but has a heavier schedule starting the next morning. Seven and one-half hours rest would seem to be too little in that context, particularly since it does not include getting to or from the airport hotel or checking in and out.

A significant number of pilots in regional air carrier operations made a joint submission in commenting on various aspects of the proposal including that for a reduced rest period of 7½ hours. This submission indicated that on one carrier alone, there are five "quick turnaround" schedules involving overnight rest periods. According to these commenters, although the rest periods are scheduled for 8 to 9 hours, frequently the flights arrive late at the overnight point thus creating a situation for reduction of the scheduled rest to 7½ hours. According to these pilots, if transportation to and from the hotel and normal functions prior to retiring and after arising are considered, the maximum time available for sleep is 5 hours and 45 minutes. These pilots contend that this amount of time is inadequate, particularly if the next day involves a heavy flight schedule.

Although the proposed 7½-hour reduced rest period was focused on during the regulatory negotiation process, the above described comments and others which opposed that provision rasie a significant issue concerning whether to adopt the 7½-hour provision as proposed or modify it. This question is exacerbated by the fact that the air transportation industry is experiencing significant changes including innovative operating practices and the entry of many new air carriers. Competition has increased substantially. Thus, there is a recognizable risk that the present relatively few rest periods in the range of 7½ hours could increase substantially.

All parties agreed to a minimum rest period regardless of the amount of flight time. In determining the specific amount of such a rest period, the FAA has decided to follow a course of action which minimizes the possibility of pilot fatigue. Accordingly, the proposal, as adopted herein, is modified to change the 7½-hour reduced rest period to 8-hours. In this respect, as discussed earlier in this preamble, at the present time the National Aeronautics and Space Administration is conducting a study of pilot fatigue factors. When the results of that study are available to the FAA, the agency will review the flight time limitations and rest requirements to determine what, if any, changes are indicated.

The FAA recognizes that some of the approximately 30,000 scheduled daily flights currently operating within the United States may depend on providing less than 8 hours of rest. Therefore, the final compliance date of this final rule is delayed long enough to provide those operators affected by the minimum rest requirement ample time to adjust those flight schedules which provide for less than 8 hours of rest.

Requests that the minimum rest be an 8-hour rest at a rest facility are not being incorporated in the final rule because travel time to and from a rest facility varies according to distance, time of day, surface traffic conditions, and other variables. The FAA believes that the 8-hour minium rest, taken together with weekly flight time limitations and compensatory requirements for rest reductions, will assure a rested flight crewmember. Since a reduced rest must be compensated for at the next scheduled rest, a flight crewmember will receive at a minimum 18 hours of rest over approximately 48 hours. Discussion at the last Advisory Committee meeting questioned whether the compensatory rest must be completed within a 48-hour period. One commenter specifically requested "definitive language" to that effect in the preamble or the proposed rule. The proposed rule only required that a compensatory rest be given at the next required rest period. The preamble by way of explanation stated that the rest would be given within "approximately a 48-hour period". The FAA did not intend to require that the compensatory rest be completed within exactly a 48-hour period. However, it was the intent of the proposal, as discussed at the last committee meeting, that the flight crewmember receive enough rest from the combined reduced and compensatory rests to overcome fatigue. In order to assure that a flight crewmember receives both the reduced and compensatory rests within a reasonable period, the final rule requires, in all appropriate sections, that the compensatory rest begin no later than 24 hours after the commencement of the reduced rest period. The longer compensatory rest is necessary within a reasonable time period to overcome any acute fatigue incurred during the flight times scheduled before and after the reduced rest period.

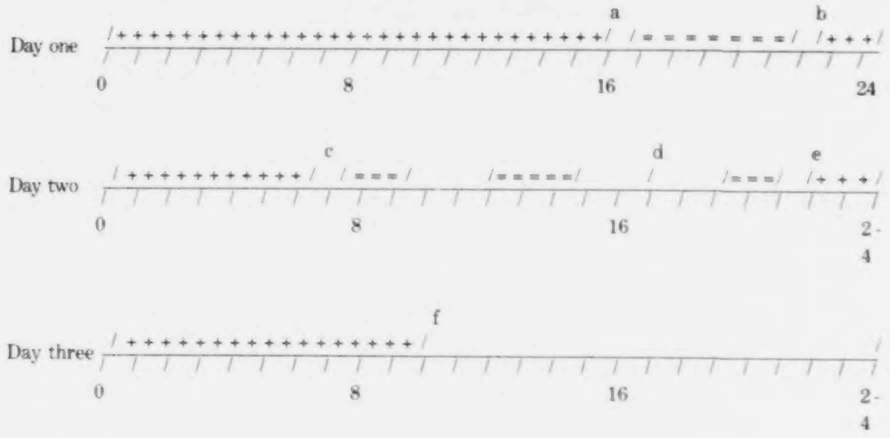
A number of commenters expressed concern that the rest reduction provisions of the rule would result in the scheduling of short flights late in the duty period of the first day, minimum rest overnight, and a strenuous flight and duty period on the second day. This concern, plus hypothetical schedules submitted in comments, suggest that these provisions have not been entirely understood. For example, one commenter stated that a flight crewmember could be scheduled for 4 consecutive 15-hour days with 7.5 (now 8) to 9 hours of scheduled rest between the duty periods if the flight crewmember is scheduled for less than 8 hours of flight time each day. The statement is incorrect because in 4 consecutive days with less than 8 hours of scheduled flight time during any 24-hour period, a reduced rest of 8 hours for the first scheduled rest must be compensated for at the second scheduled rest by at least 10 consecutive hours of rest.

It should be noted that the rest requirement is based on the number of flight hours looking back 24 hours from the completion of each flight segment. If a pilot is scheduled for 4 hours of flight time late on the first day and receives a reduced rest of 8 hours, he or she can only be scheduled for up to 5 hours of flight time the following morning, since the flight crewmember cannot be scheduled for 9 or more flight time hours in 24 consecutive hours, based on an 8-hour reduced rest period. (See Figure 2)

The purpose of the rest reduction is to allow scheduling flexibility for the benefit of air carriers, pilots, and the flying public. Although this rule allows for scheduling a reduced rest, it does not allow for any reduction of the minimum reduced rest or of the minimum compensatory rest under any circumstances. Therefore, in order to benefit fully from this flexibility, an air carrier should schedule realistically to avoid any possible flight schedule disruptions. The FAA expects that most air carriers will schedule at least 9- to 11-hour required rest periods. But, in those instances when air carriers need to schedule a shorter rest or when rest must be reduced because actual flight time has exceeded scheduled flight time, the rule allows for some scheduling flexibililty.

Figure 2

REDUCED REST TIED TO NUMBER OF FLIGHT HOURS IN 24 CONSECUTIVE HOURS



(+) Scheduled rest
(=) Scheduled flight time

(a) At 1600 hours the flight crewmember reports for duty after 24 hours rest.

(b) At 2200 hours the flight crewmember is scheduled to be released from duty having been scheduled to fly 4 hours.

(c) At 0600 hours (Day two), the flight crewmember is scheduled to report for duty after an 8 hour reduced rest.

(d) By 1700 hours (Day two) the flight crewmember may not be scheduled for more than 4 hours and 59 minutes of flight, or he or she will equal or exceed 9 hours of flight time in 24 consecutive hours which would not be legal unless he or she is scheduled for at least 9 hours of reduced rest in the preceding 24 hours.

(e) At 2200 hours (Day two), 24 hours after the commencement of the reduced rest, the flight crewmember is released from duty to 11 hours of compensatory rest of a least 8 or more but less than 9 hours of scheduled flight time.

(f) At 0900 hours (Day three), the flight crewmember completes the compensatory rest.

A number of commenters requested that the word "rest" be defined or that rest be measured as the period between "release to report" and that release and report times be specified in the rules to allow 1 hour outside the rest period for report and 30 minutes outside the rest period for release. Actual report and release (briefing and debriefing) procedures vary among air carriers depending on certain factors, such as agreements made with employees. In additions, actual time spent for report and release duties may vary according to the nature and time of the flight. The FAA will continue to leave briefing and debriefing time allotments to the discretion of the air carrier as long as the air carriers permit adequate time to perform required preflight and post flight duties and do not infringe on the required rest periods.

A number of commenters stated that the new sliding scale for required rest plus the system of reduced rests and compensatory rests is more complicated than the current rule. Actually, the proposed rule is very simple if reduced scheduling is not used, and no air carrier is required to schedule a reduced rest period. However, to provide guidance for scheduling in compliance with the new rule, the FAA has added examples and a chart to this preamble to the rule that can help to determine if a schedule is in compliance.

Actual Flight Time vs. Scheduled Flight Time

While §§ 121.471 and 135.265 deal primarily with daily scheduled flight hours, *actual flight hours* determine compliance with weekly, monthly, and annual limits. Sections

121.471(g) and 135.263(d) state that a flight crewmember is not considered to be scheduled for duty in excess of flight time limitations if the scheduled flights *normally* terminate within the limitation. In scheduling flights, each air carrier must provide adequate time for the flight crewmember to perform required pre- and post-flight duties, and at least the minimum rest periods required by the rules.

A number of commenters objected to the lack of a provision for a make-up rest in Part 121 domestic operations and Part 135 scheduled operations, such as exists in the Part 135 unscheduled operations rules for instances when actual flight time exceeds scheduled flight time. In answer, compliance with the flight scheduling rules requires each air carrier to schedule realistically. In addition, each flight crewmember, if provided the opportunity, should bid a realistic schedule. If actual flight time is consistently higher than the scheduled flight time allowed, the schedule should be adjusted. It should also be noted that the required rest period in § 121.471(b) and § 135.265(b) is actual rest time which may not be reduced except in accordance with § 121.471(c) and § 135.265(c). If a flight crewmember does not receive the required number of hours of rest, the operator and the flight crewmember are in violation of the regulation. The FAA intends to enforce the regulation vigorously. Realistic scheduling and bidding should provide a reasonable balance betwen scheduled flight hours and rest periods on a daily, weekly, monthly, and annual basis. Public safety demands realistic scheduling and properly rested flight crewmembers.

Two commenters raised a question about the application of the rule when during a 24 consecutive hour period, actual flight time exceeds scheduled flight time. For example, if a flight crewmember is scheduled for 7:45 hours of flight and 9 hours of rest in the 24 hours preceding the scheduled completion of the flight, and because of enroute delays, the crewmember actually flies 8:05 hours, does the subsequent rest have to be 10 hours? *No,* because the flight crewmember was not scheduled for more than eight flight hours. Nor is the air carrier required to provide a longer compensatory rest at the next scheduled rest period because the actual flight time exceeded scheduled flight time. No penalty exists in either §§ 121.471 or 135.265 for circumstances under which actual flight time exceeds scheduled flight time. However, if actual flight hours infringe on a required minimum reduced rest or makeup rest, the full, required minimum rest must be given at the completion of the late flight even if doing so results in late departures for subsequent flights. As a further example, if a flight crewmember is scheduled for 5 hours of flight followed immediately by 9 hours of rest and because of reasons beyond the control of the operator or flight crewmember the flight infringes on the scheduled rest, one of two events could occur: (1) If the total scheduled flight time in the 24 consecutive hours is less than 8, the required rest could be reduced to 8 hours with a compensatory rest of 10 hours given at the next scheduled rest; (2) If the rest is already a minimum rest, the flight crewmember must be given that rest, which may mean that subsequent scheduled flights will have to be delayed.

Flight Crewmember Responsibility

At the September 11, 1984, meeting, several committee members requested that the proposed language in § 121.471(a) ". . .no domestic air carrier may scheudule any flight crewmember and no flight crewmember may accept . . ." be changed by deleting the words "no flight crewmembers may accept." According to the committee, the phrase places responsibility for accepting an assignment on the crewmember which can create labor-management problems for the air carriers. Committee members think that the air carriers should have full responsibility for scheduling flight time. Members representing labor organizations expressed the concern that in the event of an accident, a flight crewmember could be blamed if he or she had accepted an assignment for flight time beyond his or her limit. A number of commenters also stated that requiring flight crewmembers to be responsible for the flight time limits could create confusion if a difference of opinion arises between a flight crewmember and an operator as to whether a flight will extend beyond the flight time limits.

"Flight crewmember responsibility" is a requirement in current Part 135, § 135.261. The FAA has retained the language throughout the final rule because the provision is essential for enforcement of the flight time limits. For example, in instances where a flight crewmember has logged commercial flying other than the flight time logged for the air carrier, the air carrier might not have knowledge of the additional commercial flying. Thus, the flight crewmember must also be responsible for complying with the flight time limits and rest requirements.

The FAA wants to stress that the goal of these revisions is to prevent fatigue. Acute or short-term fatigue will be prevented by the introduction of a minimum daily rest requirement in Part 121, regardless of the amount of flight time scheduled. Cumulative or long-term will be prevented by instituting either weekly, monthly, and annual flight time limitations for Part 135 scheduled operations or quarterly, biquarterly, and annual flight time limitations for Part 135 unscheduled operations. It is the responsibility of both the operator and the flight crewmember to prevent fatigue, not only by following the regulations, but also by acting intellegently and conscientiously while serving the traveling public. This means taking into consideration weather conditions, air traffic, health of each flight crewmember, or any other circumstances (personal problems, etc.) that might affect the flight crewmember's alertness or judgment on a particular flight. The FAA also emphasizes that accurate flight time records must be made. The agency will consider it a very serious matter if recording of flight time is not accomplished in an honest manner.

Dual Operations

In Notice 84-3, the FAA stated that "Part 135 operators who operate scheduled passenger-carrying operations under Part 121 are subject to the domestic air carrier flight time limitations of Subpart Q." The FAA requested comments on whether additional language was needed in the rule to clarify this requirement. The purpose of the statement was to clarify for air carriers that operate under both Part 121 and Part 135, that they must comply with Part 121 Subpart Q flight time limits and rest requirements for their Part 121 domestic air carrier operations. The statement was specifically referring to Part 135 operators who had been operating scheduled passenger-carrying operations under Part 121 Subpart S and who recently have been required to comply with the domestic air carrier requirements of Subpart Q and other rules applicable to domestic air carrier operations. No specific comments were received on this issue.

A number of comments indicated and the deliberations of the Advisory Committee confirmed the existence of a broader problem concerning dual operations. Several comments were received from air carriers who fly both scheduled and unscheduled operations. These comments expressed confusion about how to comply with the rules. Should a dual operator make all its operations comply with whatever the most restrictive flight time limits and rest requirements are? For example, should a Part 135 scheduled operator who has some Part 121 operations comply in all operations with the more restrictive Part 121 rules? Or should that operator maintain separate crews, one for Part 121 operations and one for Part 135 operations? The same questions arise for operators who have both Part 135 scheduled and Part 135 unscheduled operations, and for operators who fly different types of Part 121 operations, such as domestic and supplemental.

The long-standing policy of the FAA has been to permit dual operators to use the same flight crewmembers interchangeably for different types of operations. However, an operator may maintain separate crews for different types of operations if that is more convenient. To be in compliance with the rules, a pilot who flies dual operations must, in all respects, comply with the flight time limits and rest requirements for the particular operation being conducted. Thus, under the new rule, a pilot flying Part 121 domestic flights and Part 135 scheduled flights could legally fly both types of flights interchangeably up to 1,000 hours in a calendar year. The pilot could then continue to fly Part 135 scheduled flights for an additional 200 hours, but could no longer fly Part 121 domestic flights. The same principle would apply for the monthly and weekly limits. In the case of dual operators who operate Part 121 domestic and supplemental flights, a pilot could fly up to 30 hours of domestic flight operations and supplemental operations in less than 7 days. During a 7-day period, the pilot could then continue to fly supplemental operations, which have no weekly limit, but could not fly more hours of domestic operations. However, the 30 hours in 7 days limits may prohibit the pilot from conducting a domestic flight on the eighth day.

Dual operators who assign pilots interchangeably ona daily basis must also see that the pilot has satisfied all of the flight time limits and rest requirements. Thus, for any assigned flight hours, a pilot must have had the required amount of rest and must fly within the daily flight time limitations for the particular type of operation. For example, a pilot who flies both Part 135 scheduled operations and Part 135 unscheduled operations on a daily basis must be in compliance with both sets of rest and flight requirements. If a pilot is flying scheduled operations morning and afternoon, the pilot must have had at least the required rest under § 135.265 and may not fly more than 8 hours between rests. If in addition to scheduled flights, the pilot is flying unscheduled operations in the middle of the day, the pilot must have had at least 10 hours of rest in the 24 hours preceding the completion of any flight.

On a daily basis, in instances where the requirements are not parallel (most cases) the more restrictive limits will necessarily apply. A certificate holder who plans less than 8 hours of flight time for combined scheduled an unscheduled flights must schedule at least 10 hours of rest preceding the flight hours. Certificate holders who plan more than 9 hours of scheduled and unscheduled flights must give 11 hours of rest in the preceding 24 hours. If the certificate holder reduces the 11-hour rest as allowed under § 135.265(c)(3), he may only reduce it to 10 hours or he will be in compliance with § 135.267(c)(2). In the same way, a certificate holder who conducts scheduled and unscheduled operations on a daily basis must adhere to both daily flight time limits of § 135.265(a)(4) and (5), and § 135.267(c)(1) and (2) as applicable. This certificate holder cannot schedule a pilot for more than 8 hours of flight time between required rest periods nor schedule a pilot for more than 10 hours of flight time in any 24 consecutive hours.

Clearly, dual operations do present scheduling complications and always have. However, the FAA believes that it is beneficial to the majority of operators to have flight time limits and rest requirements specifically suited to different types of operations. One rule for all operations would eliminate the complications of dual operations, but might unreasonably restrict certain types of operations. Under the new rule, dual operators will continue to be required to comply with all applicable rules. However, in Part 121 and Part 135 rules certain mechanisms exist which allow some dual operators to simplify their operations. Section 121.5 allows flag and domestic air carriers to obtain authority from the Administrator to conduct charter flights or other special services, over certain routes, under the rules applicable to flag and domestic air carriers. The requirements in § 135.261 have been changed from the proposed rule to allow any Part 135 operator the option of conducting all Part 135 operations under the rules for scheduled operations after obtaining an appropriate operations specification amendment. This should reduce the administrative and operational management burdens for Part 135 dual operators.

SECTION BY SECTION DISCUSSION

Part 121, Subpart Q—Flight Time Limitations and Rest Requirements: Domestic Air Carriers.

Subpart Q of Part 121 consists of §§ 121.470 and 121.471. Throughout Subpart Q, the words "rest requirements" have been added, in the subpart heading, in the body of § 121.471, and in the heading of § 121.471. In addition, certain nonsubstantive editorial changes have been made for clarity or correctness.

The following sections describe the technical changes to the proposed rule incorporated in the final rule. All of the major issues involving Part 121 and related changes have been discussed earlier in this preamble.

Section 121.471—Flight time limitations and rest requirements: All flight crewmembers.

Paragraph (a)(4) is changed from the proposed rule by adding the word "required" to clarify that the rest period must be a scheduled rest period as described in paragraph (b) or (c). The proposed 9 flight hours between rests in paragraph (a)(4) is changed to 8 flight hours, and the proposed minimum of 7½ hours of rest in paragraph (c)(1) is changed to 8 hours.

Paragraphs (c)(1), (2), and (3) are changed from the proposed rule to clarify in the rule that the compensatory rest must begin within 24 hours of the commencement of the reduced rest. (See the "Daily Rest Requirements Part 121 and Part 135 Scheduled Operations section of the preamble.) The undesignated paragraph at the end of paragraph (c) is redesignated as paragraph (c)(4) in order to make its relationship to the paragraph clear.

The word "duty in the second line of paragraph (g), which describes flight time in excess of limitations, is changed in the final rule to "flight time", for consistency.

Paragraph (h) is removed, as discussed in the section on "Cumulative Flight Time Limits—Certain Part 121 Operations."

Part 135, Subpart F—Flight Crewmember Flight Time Limitations and Rest Requirements.

The flight time limitations and rest requirements for Part 135 operations are organized into the following categories to accommodate the needs of the varied operations conducted under Part 135: (1) general requirements for all Part 135 operations; (2) scheduled operations; (3) unscheduled operations (one- and two-pilot crews and augmented crew); and (4) helicopter hospital emergency medical evacuation services (HEMES).

Some technical changes have been made throughout Part 135, Subpart F. First, the words "rest requirements" are added to the subpart and section headings throughout the subpart in order to made it clear that the subpart contains rest requirements as well as flight time limitations.

Second, whenever the word "duty" meant "flight time" the wording has been changed to read "flight time" in order to make the language in the subpart consistent with the FAA interpretation of the word "duty".

In addition, certain nonsubstantive editorial changes have been made.

The following sections detail the technical changes from the proposed rule in the final rule. They also describe those changes and comments related to controversial issues in specific sections of Part 135, Subpart F. General issues related to both Parts 121 and 135 have been considered in earlier sections of this preamble.

Section 135.261—Applicability.

Proposed § 135.261(b) limited by definition "scheduled operations" to "scheduled passenger carrying operations" with a published schedule of at least five round trips per week. Cargo operators represented on the Advisory Committee and those who commented in writing on the rule requested that cargo operations also be allowed to operate under § 135.265, scheduled operations rules. The FAA has changed the proposed rule to permit any Part 135 operator to comply with the flight time limitations and rest requirements of § 135.265 thereby reducing any compliance burden caused by keeping two sets of records. In addition, paragraph (b) has been restructured for the sake of clarity.

Paragraph (c) specifies that operations not included in the definition of "scheduled passenger-carrying operations" and operations conducted only within the state of Alaska (except for the helicopter hospital emergency medical evacuation operations) are conducted under the rest requirements and flight time limits of §§ 135.267 and 135.269. Comments were invited by the FAA on the inclusion of scheduled Alaskan operations under Part 135 unscheduled operations. One commenter opposed including Alaskan operations under unscheduled operations because the commenter believed that all operators providing regularly scheduled air service should be subject to the same rules. On this issue, the FAA remains in agreement with certain members of the Advisory Committee who maintain that because of the size of the state and the weather conditions, Alaska has a unique flying environment which justifies the flight time limits and rest requirements applicable to unscheduled operations. One commenter in Alaska who opposed the rule apparently assumed the scheduled operators in Alaska would have to comply with scheduled rules. This is a misunderstanding of the proposal. Scheduled and unscheduled operations conducted solely within the state of Alaska must comply with § 135.267 and § 135.269, i.e., rules for unscheduled operations. However, Alaskan operators may elect to comply with § 135.265, flight time limitations and rest requirements for scheduled operations, and obtain an appropriate operations specification amendment.

Some comments requested that large helicopters, those with a passenger seating capacity of more than 30 people, be allowed to fly under the Part 135 flight time limitations and rest requirements. They argued that the new, large helicopters are operated in the same way and under the same conditions as smaller helicopters. This concern is outside the scope of this rulemaking. The operation of large helicopters has been accommodated in a recent revision of SFAR 38.

Section 135.263—Flight time limitations and rest requirements: All certificate holders.

Section 135.263 contains requirements that apply either to all operations under Part 135 or to more than one type of operation. Most of the paragraphs in § 135.263 originated in current § 135.261. Paragraph (d) states that under certain conditions a flight crewmember is not considered to have flown in excess of the flight time limitations. It has been changed from proposed § 135.263(d) to clarify that it applies to unscheduled as well as scheduled operations.

The requirements for compensatory rest for flight crewmembers who have exceeded the daily flight time limitations, which appeared in proposed § 135.263(e), have been moved to §§ 135.267(e), 135.269(c), and 135.271(c) for clarity and in order to tailor them appropriately to the different unscheduled operations.

The deviation authority that appeared in proposed § 135.263(f) is moved to § 135.267(g) because it concerns only that section.

Section 135.265—Flight time limitations and rest requirements: Scheduled operations.

The words "air carrier" in this section have been changed to "certificate holder" in order to clarify that § 135.265 applies to any operator conducting scheduled operations under Part 135, not just air carriers.

The flight time limit in § 135.265(a)(3) has been changed from "32 hours in any 7 consecutive days" to "34 hours in any 7 consecutive days." (See the discussion of "Cumulative Flight Time Limits.")

Section 135.265(a)(5) has been amended to clarify that the rest periods referred to are the required rest periods in paragraphs (b) and (c). The proposed 9 hours between rest in paragraph (a)(5) is changed to 8 hours, and the proposed minimum of 7½ in paragraph (c)(1) is changed to 8 hours. Paragraph (a)(5) is also changed from the proposed rule by adding the phrase "qualified under this Part for the operation being conducted." This phrase was inadvertently omitted from the proposal. This is consistent with other provisions imposing certain qualifications for certain types of operations.

Paragraphs (c)(1), (2), and (3) are changed from the proposed rule to clarify in the rule that the make-up rest must commence within 24 hours of the beginning of the reduced rest. (See the "Daily Rest Requirements Part 121 and Part 135 Scheduled Operations" section of this preamble.)

Section 135.267—Flight time limitations and rest requirements: Unscheduled one- and two-pilot crews.

For the first time, quarterly, biquarterly, and yearly flight time limits are imposed. Quarterly limits, as opposed to monthly limits, allow flexible scheduling for seasonal and on-demand operations and provide adequate rest for flight crewmembers engaged in such operations. The rule requires 13 rest periods of at least 24 hours in each calendar quarter, as proposed, instead of 24 hours off in 7 days. This provides for the same number of days off as are required for Part 121 and scheduled Part 135 operators, and at the same time recognizes that unscheduled pilots, particularly in remote operating locations, may not find it convenient or necessary to take one day off every 7 days.

Daily flight time limits for one- and two-pilot crews remain 8 and 10 hours, respectively, in every 24 consecutive hours. However, § 135.267(c), which is adopted as proposed, allows an operator and flight crewmember to use a schedule of regular daily duty hours rather than a rolling 24-hour clock.

In paragraph (a), editorial changes have been made: (1) to clarify that the section applies to unscheduled one- and two-pilot crews, and (2) to remove the words "duty during."

Paragraph (b)(2) is changed by adding the phrase "for the operation being conducted." This is consistent with other provisions imposing certain qualifications for certain types of operations.

Paragraph (c)(1) is changed to incorporate elements of proposed paragraph (e), and (e) is deleted in order to avoid redundancy. Also, the paragraph is changed to clarify that the regularly scheduled rest period may be more than 10 hours.

A new paragraph (e) is added which contains the make-up rest provisions for overflights formerly in § 135.263(e) of the proposed rule. The provisions were moved unchanged to this section for convenience and to enable the similar provisions that apply to augmented crews in § 135.269 and to helicopter emergency medical evacuation services (HEMES) in § 135.271 to be tailored to those sections.

Comments on the make-up rest provision stated that, since a 16-hour rest was considered excessive under current Part 121 and Part 135, the maximum make-up rest should be no more than 13 hours of rest. The FAA does not agree. Although 16 hours may be excessive as a routinely required rest, it is not excessive as a make-up rest. The purpose of the make-up rest is to ensure that each flight crewmember is properly rested prior to the next assignment. The provision has always acted as an incentive to operators to plan for actual flight times, and leave an adequate margin of safety.

A number of commenters wrote that the make-up rest clause is inequitable because it applies to Part 135 operations and not Part 121 operations. Actually the provision applies to the unscheduled operations in Part 135, where daily flight time limits are actual limits. In scheduled operations under Part 135 (§ 135.265) and Part 121 operations, there is a limit to the number of scheduled flight time hours (8 hours) between required rest periods, but no specified limit to actual daily flight time (except for one-pilot crews in § 135.265). The wording and position of the make-up rest clause in proposed § 135.263(e) is changed to make it clear that it applies to the unscheduled flights in §§ 135.267 through 135.271, and not to the scheduled flights in § 135.265. The undersignated paragraph that followed proposed § 135.263(e) is deleted. The paragraph is unnecessary now that the application of the make-up rest provision has been clarified.

The deviation authority originally proposed in § 135.263(f) is transferred to § 135.267(g), the specific section to which it applies. If granted, a deviation will allow an operator who conforms with the current rules to continue under those rules for a period of time not to exceed 2 years. This will give operators who may experience difficulties because of the more restrictive cumulative flight time limits in new Part 135, Subpart F, additional time to adjust their operations. The reference to § 135.269 has been removed from the deviation authority since the current rules do not address augmented crews, and the deviation authority is not intended to apply to those operating under exemptions to the current rule. Each of these exemptions contains a provision that states that the exemption terminates with the adoption of any amendments to the Part 135 flight time limitations and rest requirements that provide for augmented crews.

The proposed rule stated that, within 2 years after the issuance of this rule, the Director of Flight Operations could issue operations specifications authorizing a deviation from any specific requirement of §§ 135.267 and 135.269 if he or she finds that the deviation provides a substantially equivalent standard of safety. Commenters pointed out that the proposal did not limit either the duration of the deviation or the time within which

which the FAA must respond to a request for a deviation. To correct the proposed language, the final rule makes the deviation effective for up to 2 years after the effective date of this rule, and allows an operator who has requested a deviation to operate under the current rule until the FAA has reviewed the request and made a final determination.

One commenter also suggested that deviations be discouraged and that requests for deviations be reviewed by personnel specifically trained in flight crew stress and fatigue management. The FAA intends that the deviation authority will provide a smooth transition to compliance with the new rule. The FAA will base its approval for allowing a deviation on the certificate holder's need for additional time and its ability to maintain a comparable level of safety.

Section 135.269—Flight time limitations and rest requirements: Unscheduled three- and four-pilot crews.

Section 135.269 provides flight time limitations and rest requirements for augmented crews which in the past have always been handled by exemption. This section limits not only hours of flight deck duty, but also hours of duty and hours aloft.

Paragraph (b) is redesignated as paragraph (d) and moves to the end of the section. Proposed paragraph (c) becomes paragraph (b) and the cross references are changed accordingly. This is done to make the organizations of this section consistent with the rest of the subpart.

The term "flight time" in paragraphs (b)(2) and (c) is changed to "flight deck duty" in order to make the language consistent with similar provisions in Part 121 (§§ 121.507 and 121.509). The word "approved" in proposed paragraph (b)(5) has been replaced by the word "adequate" to be consistent with the requirements applicable to augmented crews in Part 121.

A new paragraph (c) is added which contains the compensatory rest provisions, formerly in proposed § 135.263(e), which apply particularly to augmented crews.

No substantive comments on § 135.269 were received.

Section 135.271—Helicopter hospital emergency medical evacuation service (HEMES).

This rule provides specific flight time limits and rest requirements for helicopter hospital emergency medical evacuation services. The rule was based on FAA experience with numerous certificate holders operating under exemption. The internal cross reference in proposed § 135.271(a) has been deleted, and the referenced material has been included in the final rule in full for the convenience of the user.

New comensatory rest provisions have been added to this section in paragraph (c). The FAA has decided that the provisions that were contained in proposed § 135.263(e) are not appropriate to HEMES operations, nor do they reflect the requirements of the exemptions on which this rule is based. As stated in the preamble to the NPRM, this rule is based on the terms of typical exemptions for emergency evacuations because of their undoubted public benefit. Typically, the exemption required the development of procedures for the termination of a HEMES assignment "When it becomes apparent that . . . a flight crewmember might be required, for an emergency situation, to exceed 8 hours duty during flight time." While the FAA does not find it necessary for the rule to be that stringent, a HEMES pilot who exceeds 8 flight hours during any 24-hour period will not be given a graduated rest. Instead, he or she must be relieved of the HEMES assignment and immediately given a minimum rest period of:

1. 12 consecutive hours for an assignment of less than 48 hours.
2. 16 consecutive hours for an assignment of more than 48 hours.

A flight crewmember who has exceeded 8 flight hours in any 24-hour period of a HEMES assignment, because of circumstances beyond the control of the certificate holder or flight crewmember, is assumed to be tired and may be unsafe to conduct additional flight operations under demanding conditions. It is highly improbable that any HEMES flight crewmember will exceed 8 flight hours during any 24-hour period of a HEMES assignment, because the assignment is for emergency medical evacuation purposes only. The HEMES assignment is not to be used for the routine transport of patients to, from, or between hospitals. Rather, it is intended to be used in bona fide emergency situations.

Proposed paragraph (d) is changed by adding a sentence which explains that the flight crewmember must be relieved if he or she has not or cannot receive 8 hours of rest during any 24 consecutive hour period of a HEMES assignment. It is amended to be consistent with the conditions of the exemptions. The word "approved" in proposed paragraph (f) has been replaced by the word "adequate" to be consistent with the language in other parts of the FAR.

Paragraph (h)(1) is changed from the proposed rule by removing the words "at least 24 hours but," in order to make paragraph (h) compatible with the new compensatory rest provisions in paragraph (c).

One commenter objected to the exclusion of fixed-wing aircraft from the HEMES rules. The FAA has excluded fixed-wing aircraft because they are not truly hospital based, and the flight crewmember of an airplane does not work in the same closely controlled environment experienced by a helicopter flight crewmember based at a hospital heliport.

Economic Evaluation

FAA analysis indicates that there should be no significant adverse impact associated with the amendments, and That they will not have a significant economic impact on a substantial number of small entities. The amendment includes a number of changes which should benefit the industry. However, it is not possible for the FAA to quantify the benefits associated with the rule, as these benefits can only be achieved by the air carriers after any operational flexibilities are translated into actual use.

Part 135 Benefits

The benefits which result specifically from weekly and other flight time limits derive from improved safety, since the maximums established will prevent a flight crewmember from accruing unsafe amounts of flight time. These benefits are not specifically quantifiable, due to a lack of detailed accident records. Specifically, accident records rarely address cumulative fatigure, which is the primary problem addressed by these amended standards.

There are additional benefits associated with the amendments, resulting from increased flexibility in crew scheduling options, and reduced penalties for exceeding flight time limits. Aircraft and crew utilization can improve, providing benefits. Scheduled operators, for example, can provide 9 hours of rest after less than 8 hours of flight time, down from a minimum 10 hours of rest under current rules. The minimum rest periods can be reduced, whereas previous minimums could not be reduced. Additionally, while the regulation for unscheduled operators before amendment required 16 hours of make-up rest if daily flight time limits were exceeded, the amendment allows for less compensating rest, unless the daily limit is exceeded by more than 1 hour. After amendment, there is no requirement for scheduled operators to provide compensating rest when flight time limits are exceeded. The benefits associated with crew utilization flexibility and the change in make-up rest cannot be quantified with the data available. The changes can be evaluated economically by management only after experience with the flexibilities of the final rule.

Part 135 Costs

Part 135 operators incur costs as a result of these amendments in two ways. First, operators' scheduling costs will increase; second, decreased crew utilization will involve a cost for some operators. These costs will be higher for scheduled operators than for unscheduled operators.

Increased scheduling costs will affect both scheduled and unscheduled operators. Scheduled operators will be more heavily impacted than unscheduled operators, because the most complicated and restrictive new flight time limit is the one limiting scheduled operators to 34 hours of flight time in 7 consecutive days. This restiction will involve a more complex crew scheduling process for larger operators, since the crew scheduling task will be more complicated than at present.

The economic analysis assumes that the scheduling cost for the largest 50 commuter airlines will be approximately $25,000 per year, approximately equivalent to one full-time clerk and additional office expenses. The next largest 50 commuters are assumed to incur one half the cost of the largest commuters, and the smallest 40 scheduled operators are assumed to incur a cost of $2,500 yearly. The total scheduling cost impact for scheduled operators is thus approximately $2,000,000 for the industry.

Nonscheduled air taxi operators may incur minor scheduling cost increases since they must now be concerned with quarterly, biquarterly, and annual total flight hours in addition to daily flight hours. This analysis assumes that one half of the approximately 4,000 unscheduled operators will incur no notable cost, due to their very small size. The other half of unscheduled operators is assumed to incur costs averaging $500 per operator.

The weekly and other flight time limits also involve costs associated with crew utilization.. Some scheduled firms will have to add to crew count in order to handle peaks of activity. Data submitted in comments was not substantive, however, and we expect that only about 20 scheduled operators will be affected, incurring a cost of $25,000 to $50,000 per firm. The range of industry impacts is therefore between $500,000 and $1,000,000. The impact of crew utilization changes for unscheduled operators in expected to be negligible, based on review of the comments.

One final element of amendment provides benefits to certain operators, particularly operators of unscheduled helicopter services. Section 135.267(c) refers to operations having regularly assigned duty periods, and it is discussed in the preamble to the final rule. This section involves a minor benefit which is not quantifiable, due to lack of information.

There are no other rule elements which involve notable increased costs for the Part 135 operator.

Part 121 Costs and Benefits

There is only one major change for Part 121, namely the new rule for daily rest requirements. The amendment is somewhat simpler than the rule prior to amendment and provides more flexibility in crew utilization. One potentially costly provision is that, under the present rules, there is no minimum rest requirement when crewmembers are scheduled for less than 8 hours of flight time in 24 consecutive hours. Under the amendment, there is a minimum 9-hour rest period required, which is reducible to 8 hours, as explained elsewhere. However, this cost is minimal and is balanced by benefits. The impact is minimal because the actual number of routings which would be affected by the amendment are very few.

Benefits of the Part 121 amendments result from better crew utilization, a possible reduction in the amount of time crews must be away from home, and, probably, a reduction in the number of days per month the typical crew member must work. The benefits of this amendment can only be quantified by air carriers, after experience is gained under the amendment.

For both classes of air operator, the FAA believes that the benefits of the amendments exceed any costs involved with showing compliance.

CONCLUSION: The FAA has determined that his amendment involves a regulation which is not major under Executive Order 12291 but is significant under DOT Regulatory Policies and Procedures (44 FR 11034; Feburary 26, 1979). This final rule is expected to generate no net cost, while maintaining or increasing the level of safety. Although there are a number of changes in the regulation, any potentially costly changes would be balanced by benefits. Under the terms of the Regulatory Flexibility Act of 1980, Federal Agencies must review rules with particular concern about the impact rules might have on small entities. It is certified that this rule will not have significant economic impact on a substantial number of small entities because the only costs implied are minimal and balanced by the benefits of the rule. A summary of the economic evaluation is printed in the preamble to this final rule, and a copy of the full economic evaluation is filed in the docket and may also be obtained by contacting the person listed under "FOR FURTHER INFORMATION CONTACT."

COMPLIANCE DATE

This rule will become effective October 1, 1985, at which time any certificate holder who wishes to may begin complying with the new flight time and rest requirements. However, the final compliance date of this rule is delayed until October 1, 1986, in order to allow certificate holders ample time to reschedule and bring their operations into full compliance with this rule. The delayed compliance date is particularly intended to give those few operators who have flight schedules that depend on less than 8 hours of rest time to reschedule those flights.

RULE

In consideration of the foregoing, the Federal Aviation Administration amends Parts 121 and 135 of the Federal Aviation Regulations (14 CFR Parts 121 and 135) effective October 1, 1985.

AUTHORITY: 49 U.S.C. 1354(a), 1355(a), 1421 through 1431, and 1502; 49 U.S.C. 106(g) (Revised, Pub. L. 97-449, January 12, 1983).

Amendment 135-20

Rotorcraft Regulatory Review Program Amendment No. 5: Operations and Maintenance

Adopted: October 31, 1986 **Effective: January 6, 1987**

(Published in 51 FR 40692, November 7, 1986)

SUMMARY: This rule amends and updates the operations and maintenance requirements pertaining to rotorcraft and establishes a new Class D rotorcraft-load combination. Amendments affect certain sections of Parts 1, 43, 45, 61, 91, 133, and 135 of the Federal Aviation Regulations that apply to rotorcraft.

FOR FURTHER INFORMATION CONTACT:

Marian Clemens or Thomas Stuckey, Project Development Branch (AFS-850), General Aviation and Commercial Division, Office of Flight Standards, Federal Aviation Administration, 800 Independence Avenue, S.W., Washington, D.C. 20591; Telephone (202) 267-8150.

SUPPLEMENTARY INFORMATION:

Background

On January 5, 1979, the Federal Aviation Administration (FAA) gave notice of its Rotorcraft Regulatory Review Program and invited all interested persons to submit proposals for consideration during a forthcoming Rotorcraft Regulatory Review Conference (Notice 79-1; 43 FR 23925). Such a Rotorcraft Regulatory Review Conference was held on December 10-14, 1979, in New Orleans, Louisiana. A subsequent Rotorcraft regulatory Review Meeting was held August 16-20, 1980, in Washington, D.C.

After the conference and meeting, the FAA developed plans to publish a series of five notices of proposed rulemaking. The first notice included proposals dealing with the applicability sections of Parts 27 and 29 of the Federal Aviation Regulations (FAR), plus Instrument Flight Rules (IFR) certification and icing criteria. These were subsequently adopted as a final rule effective March 2, 1983 (48 FR 4374; January 31, 1983). The second notice addressed airworthiness standards for type certification of normal and transport category rotorcraft. Amendments based upon that notice were subsequently published in the *Federal Register* on November 6, 1984 (49 FR 44422), and were effective December 6, 1984. The third notice, which covers powerplant proposals, and the fourth notice, covering airframe proposals, are still in preparation.

These amendments, the fifth in the series, are based on Notice of Proposed Rulemaking (NPRM) No. 85-8 published in the *Federal Register* on March 13, 1985 (50 FR 10144). All interested persons have been given an opportunity to participate in the making of these amendments, and due consideration has been given to all matters presented.

Discussion of Comments

The public comments are discussed below on a section by section basis. The references following each discussion relate to proposals and committees associated with the Regulatory Review Conference.

Section 1.1 General Definitions.

The proposal to amend §1.1 revising definition of "rotorcraft-load combination" and defining a "Class D rotorcraft-load" received no adverse comments. It is adopted as proposed in Notice No. 85-8.

Ref: Proposals 4.506, 507, 526, 527, 532, and 534; Committee III.

Section 43.3 Persons authorized to perform maintenance, preventive maintenance, rebuilding, and alterations.

The proposed amendment would permit a Part 135 certificate holder that operates rotorcraft in remote sites to allow an appropriately trained authorized pilot to perform preventive maintenance as defined in Part 1 of this chapter and as listed in Appendix A to Part 43. Commenters strongly support this proposal. Numerous exemptions to the current regulations that allow such maintenance have been in effect for some time. To date, preventive maintenance performed under these exemptions has been extremely successful without any known misuse and has resulted in reducing the operating cost of helicopters operating in remote areas.

One commenter suggests that the term "remote area" be further defined to prevent misuse of the intent of this authorization. A remote area can be considered as an area out of the way, far removed from normal support services, or not easily accessible by land or sea. For example, offshore oil derricks, villages in the tundra area of Alaska, and mining sites in the upper Sierra Nevada would normally be considered remote. Any additional explanation is not approprcate for the regulations. Accordingly, §43.3(h) is adopted as proposed.

Ref: Proposal 424; Committee III.

Section 43.15 Additional performance rules for inspections.

When this rule was initially proposed in Notice No. 85-8, the progressive inspection was inadvertently omitted. To correct this error, the word "progressive" was inserted in §43.15(c)(3) between the words "100-hour" and "inspection."

Several commenters recommend that §43.15(c)(2) and (3) be consolidated into one paragraph and that reference to aircraft type be changed to "a powered aircraft." Consolidation would not make the regulation any clearer. Emphasis on the fact that both reciprocating-engine-powered aircraft and turbine-engine powered aircraft require runups will help to clarify the intent of the present rule, which does not explicitly address turbine-engine-powered aircraft. Thus, the structure of the proposed rule is retained.

Commenters also express the view that the proposal would add confusion as to who should actually runup and/or start the aircraft engine to perform the required runup. As proposed, the regulation could be interpreted as requiring that the person who does the runup be the same person who approves the aircraft for return to service, even though that person may not be qualified to run the engine or engines. The rule requires that the person approving an aircraft for return to service be the person who shall perform the runup to determine satisfactory performance in accordance with the manufacturer's recommendation. If that person is qualified to return the aircraft to service, that person should also be qualified to perform the runup as required. Two other commenters recommend that, for rotorcraft, the person performing the runup should be a qualified pilot. They argue that when the engines of a helicopter with a fully articulated rotor system are runup, safety dictates that a pilot should perform that runup in case the rotorcraft becomes airborne. The FAA disagrees. Experience has shown that a mechanic who can approve the return of the helicopter to service should be able to safely runup the helicopter, exercising normal caution and good judgement. Section 43.15(c)(2) and (3) is amended as proposed.

Ref: Proposal 429; Committee III.

Part 43, Appendix A—Major Alterations, Major Repairs, and Preventive Maintenance.

All commenters referring to Part 43, Appendix A, strongly concur with the proposal, which would amend the Appendix by adding routine checks or replacement of fuel and oil strainers and filters and magnetic chip detectors under the category of preventive maintenance. The changes to Part 43, Apendix A, are adopted as proposed.

Ref: Proposals 431 and 432; Committee III.

Section 45.14 Identification of critical components.

One commenter proposes that the rule be amended to allow the omission of markings when the Administrator finds that a part is too small or that it is otherwise impractical to mark a part with any of the information required by the rule. The regulation for the marking of critical/life limited components is not new. The only change is that such marking must be made permanent and legible. The FAA has always recognized that some parts "on condition" and removed at overhaul due to wear, tolerance excesses, etc., are not suitable for permanent marking and do not have finite lives approved by the FAA. Further, such parts are not individually specified in the Maintenance Manual Limitations or Continued Airworthiness Document. Thus, such parts need not be permanently marked. Therefore, §45.14 is amended as proposed.

Ref: Proposal 433; Committee III.

Section 61.3 Requirement for certificates, ratings, and authorizations.

It was the intent of the Rotor 5 review to include authority for Category II operations for rotorcraft. The NPRM inadvertently omitted some of the changes necessary to implement this new authorization; therefore, several changes have been made to the final rule. One such change is the removal of the word "airplane" and its replacement by the word "aircraft" in §61.3(g). Another is the addition of Part 135 to the flush paragraph after paragraph (f)(2).

Section 61.21 Duration of Category II pilot authorization.

No public comments were received on §61.21, and the rule is amended as proposed.

Section 61.55 Second-in-command qualification.

The rule will extend the second-in-command pilot qualificatons to include helicopters that are type certificated for more than one required pilot flight crewmember. The proposed rule refers to "required flight crewmember." One commenter points out that unless the word "pilot" is inserted, the rule could be construed to include flight engineers. Since this is not the intent and the omission of the word "pilot" was unintentional, the FAA agrees with the suggestion and the rule is changed accordingly.

The portion of the rule pertaining to an "aircraft" simulator has been changed to "airplane" simulator to reflect the current rule. The FAA had proposed to permit the use of an "aircraft" simulator; however, the technology for helicopter simulation has not developed as rapidly as the technology for airplane simulation. The FAA will continue to develop guidelines for approval of rotorcraft simulation, and this issue will be addressed in another rulemaking action.

Ref: Proposal 438, Committee III.

Section 61.57 Recent flight experience: Pilot in command.

Section 61.67 Category II pilot authorization requirements.

Section 61.87 Requirements for solo flight.

Section 61.105 Aeronautical knowledge.

Section 61.107 Flight proficiency.

No public comments were received on §61.57, §61.67, §61.87, §61.105, or §61.107, and they are amended as proposed.

Section 61.113 Rotorcraft rating: Aeronautical experience.

Regarding the requirements for a helicopter class rating for a private pilot's license, one commenter suggests that the number of takeoffs and landings required in paragraph (a)(1)(ii) should be reduced to five or, alternatively, that the phrase "en route phase of flight" should be deleted. According to the commenter, if each landing/takeoff operation is separated by an en route phase of flight, an undue economic burden would be placed on the student since "the majority of these operations will be airport-to-airport." The commenter also points out that in some parts of the western United States, suitable night landing areas may be separated by distances in excess of 50 miles.

The FAA has not accepted the requested change for the following reason: The proposed aeronautical experience requirements were discussed at the conference, and it was the consensus that these specific experience requirements are needed to adequately train and prepare a private pilot applicant for a class rating in present-day rotorcraft. It should also be noted that ten takeoffs and landings are required for a private pilot's certificate in an airplane, which is less difficult to operate than a helicpoter. It is the position of the FAA that, by increasing the level of aeronautical experience for helicopters, the agency is promoting increased levels of safety. The requirement for ten takeoffs and landings is therefore adopted in the final rule.

The phrase "en route phase of flight" is a necessary part of the regulation, designed to prevent the applicant from merely lifting the helicopter above a given spot, hovering, and then returning it to that spot to achieve the required number of takeoffs and landings. Eliminating the requirement for an "en route phase of flight" would enable the applicant to circumvent the need to demonstrate an ability to maneuver the helicopter successfully at night in all phases of flight.

This requirement will not result in a undue economic burden. Contrary to the assumption made by the commenter that the majority of these operations would be airport-to-airport, a "takeoff and landing separated by an en route phase of flight" could be comprised of a takeoff, a short flight in the vicinity of the takeoff point, and a landing at the same place as the takeoff. An example would be a flight around the landing pattern.

The "en route phase of flight" is intended to relate to the need for certain piloting skills. Demonstration of these skills may be accomplished without flying over long distances. There is nothing in the regulation that requires an applicant to fly from one airport to another. The flight hours and maneuvers required in paragraph (a)(1)(ii) are necessary for safety and do not pose an unnecessary economic burden. Consequently, the rule is adopted as proposed.

An objection was raised to the proposed requirement for 15 hours of flight instruction in a gyroplane. This requirement is necessary to ensure a level of proficiency needed for safe operation of the aircraft. Accordingly, the proposed rule is adopted.

Ref: Proposal 448, 449, and 450; Committee III.

Section 61.125 Aeronautical knowledge.

No public comments were received on §61.125, and it is amended as proposed.

Section 61.127 Flight proficiency.

This section sets forth the operations that must be performed successfully to demonstrate the flight proficiency required to obtain a commercial pilot certificate. Among the maneuvers required for a helicopter commercial rating is rapid descent with power and recovery.

A number of objections were received regarding this rule. The commenters believe that a strong potential exists for an inexperienced student to be given a check ride by a check pilot not proficient in that particular helicopter. They express fear that this situation could lead to an accident in the event the maneuver is allowed to progress beyond reasonable limits. They question the benefit of requiring this maneuver during a check ride and suggest, alternatively, that settling with power be considered accomplished if the maneuver is signed in the student's log book by that student's instructor.

The FAA agrees that this maneuver may place the student and check pilot at undue risk. Under present Parts 27 and 29, neither the manufacturer nor the FAA demonstrates or evaluates entry or recovery from "settling with power" as part of the aircraft certification. Consequently, it is inappropriate to require the performance of an inflight maneuver that neither the manufacturer nor the FAA is required to observe during aircraft certification.

Delegation to the student's instructor of the FAA responsibility for ensuring that a certain level of flight proficiency has been attained is not the solution to this problem.

Instead, the applicant must demonstrate the ability to recognize and recover from imminent entry into settling with power, rather than to actually enter the flight regime from which it may be difficult to recover.

Accordingly, the final rule incorporates this requirement.

Ref: Proposal 453; Committee III.

Section 61.131 Rotorcraft ratings: Aeronautical experience.

A commenter suggests that commercial helicopter pilot applicants be required to have instrument flight training. The FAA does not agree with this position for several reasons. First, most helicopter operations are and will be conducted in Visual Flight Rules (VFR) conditions. In addition, the flight characteristics of rotorcraft are such that, if weather conditions begin to deteriorate, a pilot may easily and rapidly adjust altitude and direction or, if necessary, find a suitable landing site. Encountering IFR conditions in a rotorcraft is therefore not analogous to the same situation in an airplane, where suitable landing sites are far less numerous and altitude landing sites are far less numerous and altitude restrictions may be greater. Furthermore, there are fewer rotorcraft properly equipped for instrument flight than airplanes, making training and testing more difficult.

If a pilot wants to conduct operations in IFR conditions, the pilot can obtain an instrument rating. To require all commercial helicopter applicants to be trained in instrument flight would pose an unnecessary burden on the public.

Another commenter objects to the number of required hours for helicopter pilot-in-command flight. The commenter states that the requirements are reasonable for an upgrade from a private to a commercial certificate but excessive for a move from a commercial airplane to a commercial helicopter certificate. According to the commenter, most applicants will need more than 15 hours of flight instruction, and these hours are more important at this stage than pilot-in-command time. It is, therefore, suggested that the requirements be changed to 35 hours of flight instruction and 15 hours of pilot-in-command time.

Two commenters also state that the requirements for cross-country helicopter flight are excessive, expecially for those applicants who already have a commercial pilot certificate with an airplane rating. One of the commenters believes that the act of cross-country flying is not different in a helicopter than in an airplane and, therefore, the requirements should be relaxed for those applicants who hold a commercial pilot certificate with an airplane rating. The other suggests that, since helicopters are short-haul aircraft compared to airplanes, the 50 nautical mile requirement for cross-country flight should be reduced to 25 nautical miles.

The FAA does not concur with these suggestions. The requirements are necessary to demonstrate a proficiency commensurate with the subject rating. The current rule, which requires 10 hours of pilot-in-command time for commercial rotorcraft applicants, is outdated. In addition, as the world leader in training helicopter pilots, the United States is obligated to ensure that the terms of the International Civil Aviation Organization (ICAO) Convention are met. The requirement for 35 hours of pilot-in-command time is consistent with ICAO standards and is clearly reasonable for operations conducted by individuals accepting remuneration for their services.

The cross-country flight-time experience is introduced in these rules to align these minimums with ICAO standards. A cross-country flight in an airplane is not identical to a cross-country flight in a helicopter. A helicopter, with its different flight characteristics, is more affected by wind, which must be taken into consideration during the flight planning process. The wind effect becomes more significant over longer distances. In addition, piloting a helicopter, without the aid of an autopilot, is clearly more challenging when the pilot is, at the same time, attempting to navigate cross-country. Thus, the requirement for cross-country flight for an airplane commercial certificate cannot be substituted for the helicopter cross-country flight requirement.

Another commenter objects to the aeronautical experience required of an applicant for a commercial pilot certificate with a gyroplane class rating. The FAA agrees with the commenter that the proposed minimum flight hours are excessive. The regulation as proposed would impose the same hour requirements for a gyroplane class rating as for a helicopter class rating: 50 hours of flight time in a gyroplane/helicopter; 15 hours of gyroplane/helicopter flight instruction time; and 35 hours of pilot-in-command time in a gyroplane helicopter. The commenter has operated under an exemption to the requirements contained in paragraphs (b)(3) and (4) since 1983. The exemption reduces the respective requirements for a gyroplane class rating to: 25 hours of flight time in a gyroplane; 10 hours of flight instruction in a gyroplane; and 15 hours of pilot-in-command time in a gyroplane. In granting this exemption, the FAA determined that the requirements could be reduced without adversely affecting safety. The FAA now reaffirms this finding and has amended §61.131(b) accordingly.

Ref: Proposal 454; Committee III.

Section 61.159 Rotorcraft rating: Aeronautical knowledge.

No public comments were received on §61.159, and it is amended as proposed.

Section 61.161 Rotorcraft rating: Aeronautical experience.

Proposed §61.161 (b)(4) is clarified by adding the word "performing" before the phrase "the duties of a pilot in command." The remainder of §61.161 is adopted as proposed.

Section 61.163 Rotorcraft rating: Aeronautical skill.

The portion of the proposed rule pertaining to an approved rotorcraft simulator or training device has been deleted. Helicopter simulation issues will be addressed in a separate rulemaking action.

Section 61.165 Rotorcraft rating: Additional category ratings. Part 61, Appendix A—Practical Test Requirements for Airplane Airline Transport Pilot Certificates and Associated Class and Type Ratings.

No public comments were received on §61.165 or Appendix A. They are amended as proposed.

Part 61, Appendix B—Practical Test Requirements for Rotorcraft Airline Transport Pilot Certificates with a Helicopter Class Rating and Associated Type Ratings.

The phrase "ground control approach" in proposed paragraph III(c) has been changed to "surveillance or precision radar approach" to agree with the terminology used in the Airman's Information Manual.

One commenter suggests that in paragraph I(d), the phrase "in accordance with operating limitations" be changed to "in accordance with the Rotorcraft Flight Manual procedures." The commenter notes that power assurance procedures are not operating limitations and are placed in the Rotorcraft Flight Manual in the normal procedures or performance section. The comment is valid, and the language of the final rule has been changed accordingly.

The utility of requiring circling approaches as part of the practical test requirements for rotorcraft airline transport pilot certificates was the subject of another comment. The commenter suggests deleting Section III(d) based on the view that a circle-to-land maneuver after completion of an instrument approach is remarkably simple and hazard free.

The FAA does not accept this argument. Performing the circle-to-land maneuver after completion of an instrument approach procedure may not always be simpler in a helicopter than it is in an airplane, depending upon the airport environment, weather, and other traffic. A circling approach basically involves different procedures than straight-in approaches. It is, therefore, appropriate for the FAA to require a demonstrated proficiency in executing the maneuver.

A number of commenters strongly object to other maneuvers and procedures required for rotorcraft airline transport pilot ratings. They question the safety and practicality of performing such maneuvers as simulated engine failure and autorotative landings during takeoffs and landings; settling with power; and demonstration of certain emergency procedures. They argue that the FAA inspector on a check ride may be inexperienced with the aircraft and, therefore, might not be able to ensure a safe recovery from these procedures. One commenter also notes that some insurance companies specifically exclude coverage of the aircraft if autorotative landings are involved. The commenters suggest that these maneuvers not be required during a check ride but, rather, that they be considered accomplished if there is an indication in the student's log book by that student's instructor pilot that the student has demonstrated adequate proficiency.

As mentioned in the discussion under §61.127, the FAA agrees that settling with power should not be a requirement for any flight check. Therefore, the requirement of proposed Part 61, Appendix B IV(b), has also been changed so that the applicant need only demonstrate a recognition of and recover from imminent flight in the regime referred to as "settling descent with power."

The FAA maintains that all of the other maneuvers and procedures specified in Part 61, Appendix B, should be performed as part of the check ride. It is the responsibility of the FAA to ensure that an applicant for a particular rating is sufficiently competent to maintain a high degree of safety throughout all flight regimes. The standards are even higher for those certificates that enable the successful applicant to offer services for financial remuneration. Thus, it would be inappropriate for the FAA to delegate this responsibility and only require a log book entry by a flight instructor indicating adequate proficiency.

Furthermore, FAA flight inspectors are trained for flight check duties in the category of aircraft in which they conduct flight checks. Also, if an aircraft insurer objects to the routine performance of certain procedures, such as autorotative landings, a one-day waiver can usually be obtained to enable the applicant to take a flight check ride. Finally, if a maneuver or procedure is too dangerous for performance in the aircraft, a prohibition against such activity will appear in the flight manual. Therefore, this maneuver or procedure would not be required in that particular aircraft.

Ref: Proposals 434, 456, 458, 463, 464, 466, and 471 through 480; Committee III.

Section 91.2 Certificate of authorization for certain Category II operations.

No comments were received on the proposal to amend §91.2 to afford small helicopter operators the opportunity of applying for Category II instrument approach authorization. To clarify the application of §91.2, the proposed language is revised in the final rule by substituting the word "aircraft" for "airplane" and by deleting the phrase "and helicopters," thereby excluding large helicopters as well as large airplanes from the authorization to deviate from the applicable requirements for Category II operations.

Section 91.23 Fuel requirements for flight in IFR conditions.

Section 91.23 requires 45 minutes of reserve fuel for all aircraft operating in IFR conditions and ceiling and visibility requirements of 2,000 feet and 3 miles for determining if an alternate airport is needed. The proposal contained in Notice No. 85-8 would reduce the IFR reserve fuel requirement for helicopters from 45 minutes to 30 minutes. It would also lower the minimum ceiling from 2,000 feet to 1,000 feet and lower the visibility minimum from 3 statute miles to 1 statute mile as criteria for determining if an alternate airport is needed.

Five of the seven commenters expressing views on this proposal fully support the proposed changes. One commenter, however, opposes the proposal, not only for lowering fuel reserve from 45 minutes to 30 minutes for helicopters, but for reducing the ceiling and visibility requirements used to determine whether an alternate airport is needed. This commenter expresses the view that the proposal would not only provide little usefulness to the helicopter operator, but would significantly lessen the degree of safety that exists with the current rules. The commenter suggests that helicopter operators do not need relief from the fuel requirement rules in §91.23 for flight in IFR conditions but would be better served by modifying §91.83 concerning alternate airport selection requirements. A suggested amendment to §91.83 to accomplish this recommendation was proposed. Amendments to §91.83 were not considered in Notice No. 85-8; therefore, any changes affecting the substance of that section are not within the scope of this rulemaking.

Another commenter, though supporting the reduction of the required fuel reserve to 30 minutes for helicopters, questions the reduction of the ceiling and visibility requirements that determine the need for an alternate airport.

The FAA has sufficient experience with operations conducted under Special Federal Aviation Regulation (SFAR) 29, which reduces the required fuel reserve to 30 minutes for helicopters, to conclude that such a reduction will not lower the level of safety that has been established. This proposal would allow operators greater flexibility and utilization of their helicopters in the IFR environment. Accordingly, §91.23(a)(3) is adopted as proposed.

The question of weather minimums defined in paragraph (b)(2) has been analyzed in some detail. Subsequent to the recommendations developed at the Rotorcraft Regualtory Review Conference and Review Meeting, the FAA undertook an investigation to examine methods of providing a data base of weather information pertinent to the requirements and qualifications for alternate airports. The increased risk of ceilings and visibilities falling below landing minimums at several U.S. cities was quantified as a function of lowered visibility and ceiling requirements defined in paragraph (b)(2)(i) and (ii). The study utilized climatology data and weather deterioration models to calculate the probability that an airport would be below precision and nonprecision approach minimums. This investigation and study resulted in a report entitled "Weather Deterioration Models Applied to Alternate Airport Criteria," dated September 1981 (FAA-RD-81-92). The report reaches several preliminary but convincing conclusions. One of these directly related to the limitations defined in §91.23(b)(2) is: "Any reduction in alternate airport requirements should be offset by limiting the duration of the flights for which the reduced requirements apply. It is recommended that reduced requirements only apply to flights whose flight time is two hours or less." The proposal in Notice No. 85-8 to reduce the ceiling and visibility requirement, however, has no such limitation of flight time as considered necessary by the report. In light of this evidence, the ceiling and visibility requirements for helicopters contained in paragraphs (b)(2)(i)and (ii) remain unchanged from the previous rule.

Ref: Proposals 483 and 484; Committee III.

Section 91.116 Takeoff and landing under IFR: General.

No unfavorable comments were received on the proposal to amend §91.116 to establish a separate takeoff minimum of one-half mile visibility for helicopers. One commenter writing on this section recommends that takeoff minimums be established for all Part 91 operations as are landing minimums under this section. Such a suggestion is not a part of the rotorcraft review and is outside the scope of this rulemaking.

Ref: Proposal 494; Committee III.

Section 91.171 Altimeter system and altitude reporting equipment tests and inspections.

No comments where received on the proposed changed to §91. 171, and the rule is amended as proposed.

Part 91, Appendix A—Category II Operations: Manual, Instruments, Equipment and Maintenance

One of the purposes of the Rotor 5 rulemaking was to enable rotorcraft to perform Category II operations. In the NPRM, changes that would have made this new authority possible were inadvertently omitted. These changes are now included in the final rule. In Part 91, Appendix A, this change has been accomplished by removing the world "airplane" and replacing it with the word "aircraft" wherever "airplane" appears.

Section 133.1 Applicability.

One comment was received regarding the rotorcraft external load operations requirements of paragraph (c)(4). The commenter suggests eliminating the requirement for a Rotorcraft External-Load Operator Certificate for customer acceptance flights. The commenter argues that it is not logical for the FAA to eliminate the requirements for a Rotorcraft External-Load Operator Certificate during the development phase and demonstration of compliance with requirements of Parts 27, 29, and 133 and continue to require a Rotorcraft External-Load Operator Certificate for customer acceptance flights. The FAA disagrees with the reasoning. When a manufacturer offers such rides to the public, a higher degree of safety should be required. These customer pasengers have a right to know that the safety of the flight on which they are about to embark has been reviewed by the FAA. The language proposed for paragraph (c)(4) is therefore adopted in the final rule.

Section 133.1(c)(5), as proposed, reiterated the exclusion of air carriers from rotorcraft external-load certification rules. The FAA has eliminated this excusion from the final rule for the following reasons. The exclusion eliminates the applicability of all Subpart B. Contained with Subpart B is §133.19(a)(2), which requires aircraft to meet certification requirements of Subpart D, including §133.43, Structures and design. Similarly, neither §133.21 nor §133.23 would be applicable to air carrier operators conducting external-load operations. It would therefore be possible for a pilot who had met the proficiency and skill requirements under Part 135 to not have the experience, knowledge, and skill required to conduct safely and external-load operation under Part 133.

This is not the intent of the regulation. Air carrier and external-load operations are so dissimilar in function that a separate pilot certification process should be required of an air carrier when requesting external-load approval. For this reason, the proposed §133.1(c)(5) has been deleted from the final rule.

Regarding proposed §133.1(c)(6), one commenter suggests that only external-load operations conducted by a U.S. military organization for purely military purposes or for operations that cannot be conducted by a certificated commercial operator be exempt from the certification rules. The commenter cites a growing trend of use of public aircraft in competition with bona fide certificated commercial operators that is placing commercial operators at an alleged unfair disadvantage. The commenter further claims that when operations that could be performed by a commercial operator within the limits of his certificate are performed by the military, the public is entitled to the same level of safety. The commenter also suggests that the exclusion be removed from all other operators of public aircraft when conducting external-load operations.

In response to these suggested changes, the FAA notes that according to §601 of the Federal Aviation Act of 1958, the Administrator is empowered to promote safety of flight of "civil aircraft," defined in §101(17) of the Act as "any aircraft other than a public aircraft." Thus, public-use aircraft are, by definition, already excluded from §133.1. The language of proposed §133.1(c)(6) is not a change in existing regulations; it merely makes explicit the exclusion of public-use aircraft from applicability. The rule is adopted as proposed and renumbered as §133.1(c)(5).

The number of persons to be carried in Class D rotorcraft-load combinations (§133.1(d)) is an issue for several commenters. One commenter states that "person" should be changed to "persons" so that the rule would provide for more than one person to be hoisted into and out of helicopters. The commenter, however, adds that these persons should be hoisted one at a time.

The rule, as written, does not limit the number of persons that can be hoisted into and out of helicopters. Therefore, no change to the rule is necessary to respond to the commenter's point.

Regarding the number of persons that can be carried at one time, the FAA does not want to place any restriction on this number at the present time. (See additional discussion on this issue in relation to proposed §133.35(b)).

Ref: Proposals 4, 506, 507, 526, 527, 532, and 534; Committee III.

Section 133.11 Certificate required.

Section 133.13 Duration of certificate.

Section 133.21 Personnel.

Section 133.23 Knowledge and skill.

Section 133.25 Amendment of certificate.

Section 133.27 Availability, transfer, and surrender of certificate.

Section 133.31 Emergency operations.

No public comments were received on §133.11, §133.13, §133.21, §133,23, §133.25, §133.27, or §133.31; they are amended as proposed.

Section 133.33 Operating rules.

A commenter suggests a new paragraph for this section. The purpose is to exclude the flight operations check in §133.33(c)(4) to (6) if the external load is to be moved only a short distance and at translational speeds just above a hover. The stated rationale is that loads are often carried only vertically with little or no horizontal movement. The commenter argues that the requirement for forward flight tests to determine controllability is superfluous and unnecessary in these cases.

The FAA does not agree that the suggested additional paragraph is needed. Revised §133.33(c) clearly states that those flight-operational checks will be required "as the Administrator determines are appropriate to the rotorcraft-load combination." Those flight tests that are "superfluous and unnecessary" would not be required.

The requirement in §133.33(d)(l) for submitting and gaining approval for a plan for each rotorcraft external-load operation over congested areas presents problems for one commenter, who claims that much business would be lost to ground-based competition while the rotorcraft operator attempts to comply with the regulation. The commenter notes that the detail contained in the proposed regulations is more appropriate for an advisory circular or handbook. If some type of plan is deemed necessary, the commenter suggests that the helicopter operator be required to submit to the FAA district office a plan that provides details of steps to be taken to conduct the operation without hazard to persons and property. The plan should be given to the district office before the operation, and the chief pilot or assistant chief pilot would have to certify that the operation would be conducted safely.

The FAA is responsible for developing procedures designed to ensure that external-load operations over congested areas are conducted safely and, through inspection and surveillance activities, to make certain that such procedures are followed. The FAA cannot delegate this oversight responsibility to those who actually conduct the operations, and consequently, has not adopted the suggested change.

The FAA also disagrees with the statement that the regulations go beyond the scope of a normal rulemaking and are more appropriate for an advisory circular or handbook. On the contrary, the regulation provides only guidelines on the types of components comprising a plan of the kind required. Details regarding specific information to be included in each component of the plan would be more appropriately the subject of an advisory circular or handbook. As for the issue of delay, the FAA will attempt to act on any submitted plan in an expeditious manner; however, the FAA cannot compromise safety to promote any given helicopter operation.

One commenter finds the language of §133.33(f) too restrictive and suggests a change so that a person could conduct operations under IFR within the confines of a control zone when under the terms of a special VFR clearance or otherwise specifically approved by the Administrator. The rationale is that an external-load operation conducted in IFR conditions within a control zone is viable and safe under the terms of a special VFR clearance.

The FAA does not agree. The conduct of an external-load operation in IFR conditions is of sufficiently high risk that the FAA reserves the right to approve each operation. In fact, to clarify that the rule applies to all operations conducted under IFR and not only those in IFR meteorological conditions, the final rule has been changed to read "under IFR" instead of "in IFR conditions."

Finally, it should be noted that the operator has not been precluded from conducting operations under the terms of a special VFR clearance. However, approval from the Adminstrator will be required for a special VFR clearance to conduct external-load operations.

One commenter proposes the deletion of subparagraph (e) because, it is argued, §91.119(d) specifically excludes helicopters from "hard numbers." The FAA chooses not to delete this language because it serves as a clarification of the §133.33 rules as they pertain to helicopter operations. The language of §133.33 is consistent with §91.119(d).

Section 133.35 Carriage of persons.

One commenter proposes the following addition to §133.35(a): "(5) Is a person which forms a part of or is associated with a Class D external-load."

This language is redundant with the provisions already in the rule. The language proposed in Notice No. 85-8 clearly permits a person to be associated with a Class D external-load. The final rule, therefore, is adopted as proposed.

There were a number of comments on §133.35(b) regarding the persons to be carried as a Class D load and the distance over which they can be transported. One commenter states that there should be restrictions on how many persons should be carried at a time, suggesting that the number be limited to one. Others object to the carriage of any person in a hoist outside the aircraft for any distance.

In contrast, one commenter proposes an exclusion from paragraph (b) for those operations where persons are carried externally but are not intended to be hoisted inside the helicopter, such as the transfer of workers from a boat alongside a well-head to the well-head proper. Another commenter claims that it is too restrictive to limit a Class D load to one person, citing the successful experiments with 10-man Billy Pugh nets in rescue operations.

Proposed §133.35(b) has been deleted on the basis that it is too restrictive to implement a blanket restriction on the number of persons carried as a Class D load and the distance over which these persons can be carried. Rather than specify limits in a regualtion, the FAA will give appropriate guidance for Class D external-load operations to FAA district offices. The conditions under which an operator can carry persons externally will be included in that operator's approved Operations Specification. Proposed §133.35(c) had been redesignated as §133.35(b) in the final rule.

Proposal 532; Committee III.

Section 133.37 Crewmember training, currency, and testing requirements.

No public comments were received on §133.37. However, there is a potentially confusing use of the terms "class" and "type" in paragraph (c) in conjunction with external-load operations. The operation referred to relates to a particular class of external-load operation in a particular type of aircraft. No class of aircraft is intended to be specified. Accordingly, the rule has been amended to clarify the intent. Also, the proposed requirement for testing within the past 12 calendar months has been deleted.

Section 133.41 Flight characteristics requirements.

No public comments were received on §133.41, and it is adopted as proposed.

Section 133.45 Operating limitations.

One commenter notes that the proposed rule would eliminate all multiengine helicopters certificated under Part 27 and those certificated as Category B under Part 29 from conducting Class D operations. The FAA has considered this effect; however, the appropriate level of safety dictates a higher standard of airworthiness requirements for conducting Class D operations. Therefore, the rule requires multiengine Category A rotorcraft for Class D operations.

Section 133.47 Rotorcraft-load combination flight manual.

Section 133.51 Airworthiness certification.

Section 135.1 Applicability.

Section 135.23 Manual contents.

Section 135.39 Management personnel qualifications.

Section 135.117 Briefing of passengers before flight..

No public comments were received on §133.47, §133.51, §135.1, §135.23, §135.39, or §135.117; and they are adopted as proposed.

Section 135.159 Equipment requirements: Carrying passengers under VFR at night or under VFR-over-the-top conditions.

One commenter, noting that the requirements of §135.159 serve to underline the need for training of helicopter pilots in instruments, proposes that a radio altimeter with a visual or aural warning be required in addition to gyroscopic flight instruments. No justification other than the need for instrument training is given by the commenter. No safety justification is given for the proposal. Further, requirement of such a radio altimeter was not included in Notice No. 85-8, and the public has not had the opportunity to comment on an item of equipment that could have a considerable economic impact on some helicopter operators. Accordingly, the proposal is not accepted.

Another commenter points out that the proposed amendment to §135.159 is somewhat confusing and does not completely solve the problem of determining what instruments are appropriate for the safe operation of helicopters under VFR at night. The FAA agrees, and the organization for §135.159 has been modified. Though the regulation adopted is basically the same as proposed in Notice No. 85-8, the rule as adopted has been clarified to provide a clear and more meaningful presentation of the requirements.

Ref: Proposal 552; Committee III.

Section 135.167 Emergency equipment: Extended overwater operation.

No adverse comments were received on the proposal. One commenter, however, expresses concern that the proposed regulation did not recognize the high incidence of puncturing of liferafts on ditching. That commenter believes the text should stipulate an adequate design requirement versus the number of passengers anticipated. Proposed language was offered as an addition to the proposal to ensure that there were no sharp projections on the aircraft that might puncture survival equipment. The FAA has determined that this is not necessary. This regulation must be read in context with all of the regulations in this chapter, particularly those certification regulations for design requirements for aircraft and equipment. Such basic design requirements are adequate to ensure inadvertent puncturing of survival equipment or difficulties that could arise during a ditching situation.

Paragraph (b)(3)(i) was revised by deleting the word "approved." The FAA will provide guidelines for the contents of survival kits through advisory material rather than set specific standards to which all kits should conform. Air Carrier Operations Bulletin 9-59 provides such guidance. Section 135.167 is adopted as revised.

Ref: Proposal 555; Committee III.

Section 135.173 Airborne thunderstorm detection equipment requirements.

Section 135.181 Performance requirements: Aircraft operated over-the-top or in IFR conditions.

No public comments were received on §135.173 or §135.181, and they are adopted as proposed.

Section 135.223 IFR: Alternate airport requirements.

This proposal reduces helicopter fuel reserve requirements from 45 minutes to 30 minutes for flights in IFR conditions. It is closely related to proposed §91.167 concerning fuel requirements for flight in IFR conditions. The commenters who oppose the reduction of such requirements in Part 91 also oppose the proposed change in the operating rules of Part 135. However, the majority of commenters strongly support the proposal. As previously stated, the FAA has gained sufficient experience in SFAR 29 operations to conclude that reducing the required fuel reserve to 30 minutes for helicopters will not compromise safety. Accordingly, §135.223 is adopted as proposed.

Ref: Proposal 562; Committee III.

Section 135.227 Icing Conditions: Operating limitations.

No adverse comments were received on this proposal to amend §135.227 to allow helicopters to fly in icing conditions when the aircraft has been type certificated and appropriately equipped for operations in icing conditions. In this regard, it should be noted that at least one helicopter is now so certificated. Thus, it is appropriate to amend the operating rule to allow the use of such helicopters in icing conditions. Section 135.227 has been amended accordingly.

Ref: Proposal 564; Committee III.

Section 135.429 Required inspection personnel.

One commenter objects to proposed §135.429(d), arguing that a person whose competency as a mechanic has not been certified should not be performing maintenance on or inspecting an air carrier aircraft. The commenter does not agree with the argument that remote area operations require unique and innovative accommodations to allow a pilot to perform such inspections on helicopters.

The FAA disagrees. The pilot training under the regulations for utilization of this section requires the same level of competency as an inspector at the home base to ensure safety in all circumstances, particularly in the unique situations that may arise at "remote" localities. In addition, the remaining requirements of this section ensure that the procedures developed for this situation are tightly controlled. Another commenter suggests that "remote areas" be further defined. This issue has been discussed in conjunction with the proposal affecting §43.3. Section 135.429(d) is adopted as proposed.

Ref: Proposal 568; Committee III.

Economic Summary

The revised rules are expected to have immediate economic impact. All costs and savings data have been inflated* to 1985 dollars from the original 1982 dollars data appearing in the regulatory analysis for the NPRM. These data were derived by the FAA from estimates of industry conditions in late 1981 obtained by research on representative operator groups (operating under Parts 91, 133, 135, 137 and 141), which comprise the rotorcraft industry. A 5 percent profit margin factor was used to derive increased profits and lost profits from revenue increases or decreases, respectively. Cost savings are presumed to increase profits by an equal amount.

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* The Department of Commerce's December 1985 implicit price deflator for the period 1982–1985 was used to inflate the costs and savings data for this analysis.

The 43 regulatory changes in Notice No. 85-8, which were determined to have a negligible or no technical impact, and consequently a negligible or no economic impact, are listed in Table 2, "Rotorcraft Regulatory Review Program Notice No. 85-8 Rule Changes Having Negligible Or No Economic Impact." Many of these changes are either editorial or clarifying in nature. In addition, some changes incorporate into regulations what has become the current practice of the FAA or industry. The assessment of their economic impacts is based on current industry practice, agency experience, and the explanations given under each rule change in the preamble for this rule. No estimates of specific costs or savings are made for these groups of proposals, and the proposed changes are not further discussed in the economic evaluation except where referenced in the table to Appendix A. Additional discussion to that given in the preamble for those eight referenced changes is given in Appendix A of the Regulatory Evaluation.

The remaining operation and maintenance changes in Notice No. 85-8 are determined to have an impact, but the impact is not considered to be major under the procedures and criteria prescribed by Executive Order 12291 or significant under the Department of Transportation Regulatory Policies and Procedures (46 FR 11034; February 26, 1979), and the changes will not have a significant economic impact on a substantial number of small entities. A discussion of and tables for the benefits and costs (savings) of the eight changes shown in Table 1 and a regulatory flexibility determination for the impacts on small business entities for each of the four changes having an adverse economic impact are presented below.

(See P-173 and P-174 for Tables 1 and 2.)

Table 1

Cost and Savings of Notice No. 85-8 Rule Changes Having an Economic Impact

FAR Section	*Rule Changes*	*Industry Cost (Savings)*	*Principal Reason(s)*
Part 43	Appendix A: Major Alterations, Major Repairs and Preventive Maintenance	($461,000 recurring annual cost decrease) ($25,000 annual profit increase)	Reduced expense to transport and use mechanics in remote areas; reduced rotorcraft downtime.
91.23	Fuel Requirements for IFR Flight	($542,000 recurring annual cost decrease)	Reduced operatonal costs from carring less fuel.
133.21	Pilots	($537,000 recurring annual cost decrease)	Reduced cost from not having to transport chief pilot to field locations.
133.41	Flight Characteristics Requirements	($380,000 recurring annual cost decrease) ($2,100 annual profit increase)	Reduced number of operatonal flight checks.
133.51	Airworthiness Certification	($116,000 annual cost decrease) ($10,000 annual profit increase)	Reduced paperwork and administrative costs.
135.159	Equipment Requirements	$681,000 one-time cost increase $70,000 recurring annual cost $3,400 one-time lost profit $18,000 annual lost profit	Purchase and installlation of Attitude and Heading indicators for rotorcraft now operated under Exemption 2695B. Maintenance cost for instruments; one-time loss for downtime associated with installation; annual loss for some operators stopping night flight instead of purchasing instruments.
135.173	Airborne Thunderstorm Detection Equipment Requirements	$153,000 one-time cost increase $16,000 recurring annual cost[1]	Purchase, installation and maintenance of minimum thunderstorm detection (TDX) equipment. It is equipment meeting intent and requirement of rule change for rotorcraft now operating under Exemption 2695B.[1]
135.429	Required Inspection Personnel	$117,000 one-time cost[2] ($281,000 recurring annual cost decrease) or ($262,000 net annualized cost decrease—10 years, 10% capital recovery)	Relieved work requirements for work done at remote areas or sites. One-time cost for some operators to install more extensive system of maintenance.[2]

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[1] This estimate can vary from no cost to industry estimate shown. The decision to install TDX equipment or to cease flying depends on the prevailing thunderstorm weather occurrence in the area of normal operations and the flexibility an operator has to delay revenue flights until weather improves and to reschedule time into other time periods.

[2] The one-time cost accrues to a limited number of operators currently utilizing Exemption 2695B, which permits maintenance under §135.411(a)(1) instead of §135.411(a)(2). If only the exemption itself were removed, industry may have recurring cost increases. However, the change provides the primary benefit of the exemption to §135.411(a)(2), and almost all of the expected recurring cost for them would not be incurred.

Table 2

Rotorcraft Regulatory Review Program
Notice No. 85-8 Rule Changes Having Negligible
Or No Economic Impact

	FAR Section	Economic Impact
FAR Part 1	1.1	No impact—definition
FAR Part 43	43.3	Impact considered with Part 43 Appendix A
	43.15	Negligible costs
FAR Part 45	45.14	Negligible costs (Also see Appendix A in this evaluation)
FAR Part 61	61.55	Negligible costs (Also see Appendix A in this evaluation)
	61.57	No impact—clarification
	61.87	Negligible costs
	61.105	Negligible costs
	61.107	Negligible costs
	61.113	Negligible costs (Also see Appendix A in this evaluation)
	61.125	Negligible costs
	61.127	No impact
	61.131	Negligible costs (Also see Appendix A in this evaluation)
	61.159	Negligible costs
	61.161	Negligible savings
	61.163	Negligible costs (Also see Appendix A in this evaluation)
	61.165	No impact
	Appendix A	No impact—clarification
	Appendix B	Negligible costs (Also see Appendix A in this evaluation)
FAR Part 91	91.2	No impact
	91.116	Negligible savings
	91.171	Negligible costs
FAR Part 133	133.1	Negligible savings
	133.11	No impact—clarification
	133.13	No impact—clarification
	133.23	Negligible savings
	133.25	No impact—clarification (see 133.51)
	133.27	No impact—clarification (see 133.25)
	133.31	No impact—clarification
	133.33	No impact—clarification
	133.35	Negligible savings
	133.37	No impact—optional standard—see 133.1 (Also see Appendix A in this evaluation)
	133.39	No impact
	133.45	Negligible savings
	133.47	No impact—clarification (see 133.45)
FAR Part 135	135.1	Negligible savings
	135.23	No impact—clarification
	135.39	Negligible savings
	135.117	Negligible savings
	135.167	Negligible costs (Also see Appendix A in this evaluation)
	135.181	Negligible savings
	135.223	Negligible savings
	135.227	No impact—clarification

Benefits and Costs (Savings)

In addition to editorial changes to the clarification of the present regulations, benefits are likely to accure from other changes in this notice. Five changes (Part 43, Appendix A; §91.167; §133.21; §133.41; and §133.51) will provide operational and maintenance cost savings to Part 91, 133, and/or 135 operators. Three changes will cause incurring of new costs. One of these, §135.429, has an initial one-time cost by will provide a net annual cost decrease through relieved inspection work requirements. The other two, §§135.159 and 135.173, increase passenger safety. The costs of these will impact Part 135 operators currently provided relief from the present regulations by using Exemption 2695B.

For a complete discussion of the above, see the copy of the economic evaluation in the Docket, or request a copy from the individual listed under "FOR FURTHER INFORMATION CONTACT."

International Trade Impact Analysis

With the exception of three negligible cost changes that affect both airplanes and rotorcraft, this rulemaking action implements changes to the regulations governing only the operation and maintenance of rotorcraft in the United States. It should not impact U.S. services in foreign countries nor have a significant impact on foreign services in the United States. In regard to foreign services, for one example, persons authorized to conduct operations in the United States as a foreign air carrier are issued operations specifications in accordance with the requirements of Part 129 of the Federal Aviation Regulations. Therefore, the FAA cannot discern what impact, if any, this regulation would have on international trade.

Regulatory Flexibility Determination

The Regulatory Flexibility Act of 1980 (RFA) was enacted by Congress to ensure, among other things, that small entities are not unduly affected by Government regulations.

The RFA requires agencies to prepare regulatory flexibility analyses of rules that may have a "significant economic impact on substantial number of small entities." Thus, the first step in conducting a regulatory flexibility analysis is to determine whether any rule change has a significant economic impact on a substantial number of small entities. The number of businesses and all other estimates used in the following determination have been derived from information and data obtained through industry research on representative rotorcraft operators.

Three changes—§135.159, Equipment requirements; §135.173, Airborne thunderstorm detection equipment; and §135.429, Required inspection personnel—impose an additional cost on some part 135 operators. The cost imposed by the three changes is due to the planned expiration of FAA Exemption 2695F and the impact of its removal on those operators now holding the exemption. By examining the exemption holding status of the rotorcraft operators now eligible for relief from the particular rule requirement, two tests can be used to determine whether or not a substantial number of them are significantly impacted.

The RFA requirements are triggered if 34 percent of the operators using the exemption to meet the requirements of §135.159 (96 operators out of an estimated 286 who conduct night operations) incur an annualized cost increase greater than $3,300. As further explained below, the analysis indicates that these conditions are not met for any of these changes.

§135.173 Airborne thunderstorm detection equipment requirements.

Although the rule change will be relieving because the requirement for thunderstorm detection equipment for VFR operations has been modified to allow helicopter flight without the equipment under certain conditions, one group of small rotorcraft operators will be adversely affected. These are the operators who use Exemption No. 2695F, which permits the operation of rotorcraft of ten passenger seats or more under VFR (day or night) without thunderstorm detection equipment.

An estimated 41 small operators own or operate rotorcraft with 10 or more passenger seats. An estimated 9 of these 41 use the exemption and are directly affected, but only 6 will incur an annualized economic impact greater than $3,300 when the exemption is removed.[**] Because these six comprise only 15 percent of the affected population, a regulatory flexibility analysis of the exemption from the requirements of §135.173 is not required.

§135.429 Required inspection personnel.

Currently, a limited number of small operators of rotorcraft with passenger seating configurations of 10 seats or more use the exemption, which permits such operators to utilize the maintenance requirements of §135.411(a)(1) for 9 passenger seats or less instead of §135.411(a)(2) for their rotorcraft. When the exemption is removed, these operators may incur costs to install a more extensive system of maintenance for 10 plus passenger rotorcraft, but the change to §135.429 will also retain most of the annual benefits that these operators achieved under the exemption to §135.411 (a)(2).

An estimated 41 small operators own or operate rotorcraft with 10 passenger seats or more. Six of these use the exemption and will be directly affected when the exemption is removed. Even if all six incurred an annualized economic impact greater than $3,300, these six would comprise only 15 percent of the affected population. Therefore, a regulatory flexibility analysis for removal of the exemption from the requirements of §135.411(a)(2) is not required.

§135.159 Equipment requirements: Carrying pressengers under VFR at night or under VFR over-the-top conditions.

This rule requires that, for §135.159, FAA Exemption No. 2695B be rescinded. The exemption permits the operation of rotorcraft with a maximum certificated takeoff weight of 6,000 pounds or less at night under VFR without the following instruments:

(a) Slip skid indicator;
(b) Gyroscopic bank and pitch (attitude) indicator; and
(c) Gyroscopic direction (heading) indicator.

An estimated 254 small operators conduct night operations and have one or more of the subject size aircraft in their fleet. Of these 254 operators, an estimated 104 would be directly affected by removal of the exemption. However, further industry research indicates that of the 120 operators who use the exemption, only 59 will experience an annualized cost greater than $3,300 when the exemption is removed. Because these 59 operators comprise only 23 percent of the 254 operators who are subject to the proposed regulation (they fly at night), a regulatory flexibility analysis is not required for removal of Exemption No. 2695F from the requirements of §135.159.

In addition to the above economic impacts, the final rule is expected to have beneficial effects on many small businesses. These also are discussed in detail in the Regulatory Flexibility Analysis contained in Appendix B of the Regulatory Evaluation which has been placed in the docket. A summary of these beneficial effects follows.

§133.21 Personnel.

The objective of these rules is to eliminate external-load accidents due to inadaquate pilot competence in performing particular operations. Two methods of ensuring such pilot competence (which can be combined) are to require experience, such as through a "trainee" pilot working a certain amount of time with a "qualified" pilot, and through pilot testing by a qualified examiner. The proposal would permit pilot testing to be carried out by FAA employees, designated examiners, or individuals within the particular company performing the external-load operation. Present regulations provide for such test only by the Chief Pilot.

[**] The analysis was measured with information obtained from industry research made for a stricter rule proposal removing the exemption for this FAR, and the estimate is therefore conservative; that is, the magnitude of impact for each operator is expected to be less.

An estimated 179 external-load operators are potentially affected by this rule. Almost all may be assumed to be small. Benefits may be considered roughly proportional to fleet size, although variations may be expected due to operating territory and other factors. Therefore, to the extent that small operators have smaller fleets than large ones, the $481,000 projected annual cost savings may be expected to average no more than $2,687 per affected operator.

Industry research indicates that over 40 percent of Part 133 certificate holders also hold Part 135 certificates. The total fleet size distribution of Part 133 operators is unknown. Regardless of whether or not it resembles the distribution of the Part 135 fleet. The relatively high maximum average impact suggests that the threshold of economic impact significance could very well be exceeded by one-third of the potentially affected small operators.

§133.41 Flight characteristics requirements.

The objective of these rules is to reduce accidents resulting from the use of particular combinations of rotorcraft models with certain external loads and external-load attaching devices. Many such combinations of rotorcraft models, external loads, and external-load attaching devices pose a significant risk of accident even when under the control of a competent pilot. The FAA concludes that confidence in the external-load operation can only be maintained when each possible rotorcraft-load combination is successfully demonstrated at least once.

An estimated 164 external-load rotorcraft operators are potentially affected by this rule. Almost all may be considered small. Benefits may be considered roughly proportional to fleet size, although variations may be expected due to fleet diversity and other factors. Therefore, to the extent that small operators have smaller fleets than large ones, the $340,000 projected annual cost savings and $2,000 annual profit increase for all affected carriers combined may be expected to be no greater than $2,085 per potentially affected small operator, on average.

As stated previously, industry research indicates that somewhat over 40 percent of Part 133 certificate holders also hold Part 135 certificates. The size of the average impact, however, suggests that the threshold of economic impact significance could well be exceeded by one-third of the potentially affected small operators. Section 133.41 is closer to the borderline in this regard than §133.21.

Cumulative Economic Impact

The changes to Part 43, Appendix A, and §§91.23, 133.21, 133.41, 133.51, 135.169, 135.173 and 135.429 refer to different, but partially overlapping, categories of operators. The following eight changes are considered to have overlapping impacts:

(1) Part 43, Appendix A—Part 135 operators serving remote areas.

(2) Section 91.23—Part 91 operators (not holding Part 135 certificates) flying to some extent under IFR.

(3) Section 133.21—Part 133 operators in general.

(4) Section 133.41—Part 133 operators in general.

(5) Section 133.51—Part 133 operators in general.

(6) Section 135.159—Part 135 operators flying to some extent VFR at night.

(7) Section 135.173—Part 135 operators using rotorcraft with 10 seats or more.

(8) Section 135.429—Part 135 operators using rotorcraft with 10 seats or more.

Although the first and second categories are, by definition, separate from each other, there exists no operator survey data that would allow the determination or reliable estimation of the actual extent to which each of the other categories overlaps. It is possible to estimate, however, whether or not it is likely that the number of operators experiencing a significant cumulative net economic impact (beneficial or detrimental) from all eight of these rules would constitute one-third or more of the total of individual potentially affected operators, given the (separate) distributions of fleet size for Part 135 and non-Part 135 operators. The determination can be made by assuming operator impact is proportional to operator fleet size.

The total of individual operators potentially affected by any of the rules may be estimated as follows:

Part 135 operators, including all in proposal categories (1), (6), (7), and (8), and 42 percent of those in categories (3), (4), and (5). *Note*: It is estimated that 42.4 percent of Part 133 operators also hold Part 135 certificates	358
Non-Part 135 certificate holders, including 57.6 percent of those in proposal categories (3), (4), and (5)	393
Total	751

This estimate maximizes the extent of "overlapping" among relevant categories and increases the chance of one-third or more of the total individual operators' experiencing a significant cumulative net impact. This is the case because some of the overlapping considered above is not necessarily the most likely representation of actual practice. For example, Part 91 operators that fly under IFR may well not also engage in Part 133 operations, which are generally carried out under VFR.

Even with maximum overlapping of potentially affected small operator categories and given the relatively large number of non-Part 135, and even Part 135, operators that have single-craft or very small fleets, and estimated 217 out of 751 would be expected to bear a significant cumulative impact from the eight rules. The remaining 534 would not be significantly impacted. The number of small operators expected to be impacted would be less than one-third of the total of such operators unless at least 120 of those operators were eliminated by being designated "large" operators. Therefore, it is reasonable to expect that the cumulative net economic impact (beneficial or detrimental) of these rules would not reach significant levels for one-third or more potentially affected small operators.

The determination is sensitive to assumptions made concerning (1) the number of proposal category (2) operators eliminated as "large" entities, and (3) the fleet size of "small operators."

Conclusion

A final regulatory flexibility analysis is not required for the revisions being made to §§135.159, 135.173, and 135.429. For each of the revisions, the annualized cost is not greater than $3,300 for more than one-third of the operators who would be affected by the revised regulation. In view of the above, the regulatory changes herein will not have a significant economic impact on a substantial number of small entities.

Reporting and Recordkeeping Requirements

The reporting and recordkeeping requirements contained in this amendment have previously been approved by the Office of Management and Budget and have been assigned Control No. 2120-0044.

Conclusion

This rule upgrades rotorcraft certification and operational requirements and allows operators to utilize rotorcraft more fully. Therefore, the FAA has determined that this rule is not major under Executive Order 12291 or significant under Department of Transportation Regulatory Policies and Procedures (44 FR 11034; February 26, 1979). Based on the Regulatory Flexibility determinations discussed in this document, I certify that this rule will not have a significant economic impact on a substantial number of small entities. The regulatory evaluation of this rule is contained in the docket. A copy may be obtained by contacting the person identified under "FOR FURTHER INFORMATION CONTACT."

In consideration of the foregoing, Parts 1, 43, 45, 61, 91, 133, and 135, of the Federal Aviation Regulations (14 CFR Parts 1, 43, 61, 91, 133, and 135) are amended effective January 6, 1987.

The authority citation for Part 135 is revised to read as set forth below, and the authority citations following each of the sections of Part 135 are removed:

Authority: 49 U.S.C. 1354(a), 1355(a), 1421 through 1431, and 1502; 49 U.S.C. 106(g) (Revised Pub. L. 97-449, January 12, 1983).

Amendment 135-21

Airworthiness Standards and Operating Rules: Commuter Category Airplanes

Adopted: January 8, 1987 **Effective: February 17, 1987**

(Published in 52 FR 1806, January 15, 1987)

SUMMARY: These amendments to Parts 21, 23, 36, 91, and 135 of the Federal Aviation Regulations (FAR) adopt certification procedures, airworthiness and noise standards, and operating rules for an additional category of propeller-driven, multiengine airplane, designated as the Commuter Category. The amendment to Part 21 allows certification of commuter category airplanes by the same procedures applicable to other aircraft. The amendment to Part 23 adds airworthiness standards for airplanes with a maximum seating capacity, excluding pilot seats, of 19 or less, a maximum certificated takeoff weight of 19,000 pounds or less, and requires type certification compliance with the International Civil Aviation Organization (ICAO) Annex 8, Part III, requirements which apply to airplanes weighing in excess of 5,700 kilograms (12,566 pounds). The amendment to Part 36 adopts noise standards applicable to small, propeller-driven airplanes to be certificated in the commuter category. Parts 91 and 135 are amended to prescribe rules governing the operation of commuter category airplanes as required by the general operating and flight rules.

Since 1966, the FAA has been applying various additional airworthiness requirements to the certification of small airplanes, intended for use in air taxi operations, to achieve an acceptable level of safety when the affected airplanes are so utilized. These additional requirements were set forth in special conditions, Special Federal Aviation Regulation (SFAR) No. 23, Part 135, Appendix A, SFAR 41. The SFARs were temporary rules intended only to provide relief to the industry and public from the lack of suitable certification procedures and standards while the FAA developed permanent rules. SFAR 23 ceased to be applicable after July 19, 1970, and SFAR 41 expired on September 13, 1983. This final rule, which adds the new commuter category, will set forth airworthiness requirements in Part 23 for airplanes intended for use in commercial operations. As a result of this action, airplanes certificated in the commuter category will achieve a level of safety requisite for commercial operations.

This document also requests comments on new seat and weight demarcations between small and large airplanes.

DATES: The effective date of these amendments is February 17, 1987. The closing date for comments is March 16, 1987.

ADDRESS: Comments on the proposed new demarcation lines are to be marked "Docket No. 23516" and mailed in duplicate to: Federal Aviation Administration, Office of the Chief Counsel, Attn: Rules Docket (Docket No. 23516), 800 Independence Avenue, S.W., Washington, D.C. 20591; or deliver comments in duplicate to: Room 916, 800 Independence Avenue, S.W., Washington, D.C. Comments may be inspected at Room 916 on weekdays, except Federal holidays, between 8:30 a.m. and 5 p.m.

FOR FURTHER INFORMATION CONTACT: J. Robert Ball, Regulations and Policy Office (ACE-110), Aircraft Certification Division, Central Region, Federal Aviation Administration, 601 East 12th Street, Kansas City, Missouri 64106: Telephone (816) 374-5688.

SUPPLEMENTARY INFORMATION:

Regulation History

These amendments are based upon a Notice of Proposed Rulemaking, Notice No. 83-17, published in the *Federal Register* on November 15, 1983 (48 FR 52010). All comments received in response to Notice No. 83-17 were considered in adopting these amendments.

Background

Since 1953, the airworthiness standards have distinguished small from large airplanes by a 12,500 pound maximum certificated takeoff weight (MCTW) limitation regardless of the type of operation. When this weight limitation was established, little concern was expressed that this demarcation would eventually become questionable with regard to airworthiness standards for an airplane of the commuter category. At that time, there were few airplane designs near this 12,500 pound limitation; i.e., they were either considerably above or below that weight.

In 1966, the FAA established an air taxi airworthiness program with the objective to provide a transition for air taxi airplanes from the small airplane requirements of Part 23 to the transport category airplane requirements of Part 25. That program resulted in the issuance of Special Federal Aviation Regulation No. 23 (34 FR 189; January 7, 1969). An additional step in the upgrading of airworthiness standards for reciprocating-engine and turbopropeller-powered small airplanes used in Part 135 operations was the adoption of an Appendix A to Part 135 (35 FR 10098; June 19, 1970) which set forth additional airworthiness standards for airplanes with ten or more passenger seats.

On July 7, 1970, the FAA issued Notice No. 70-25 (35 FR 10911) proposing to upgrade the level of airworthiness of small airplanes intended for operations under Part 135. In response to the comments received to Notice No. 70-25, and after further consideration, the FAA determined to limit the future applicability of Part 23 to small normal, utility, and acrobatic category airplanes with a seating configuration, excluding pilot seats, of nine or less. At that time this action was considered more appropriate than adding additional airworthiness requirements to Part 23. This action was based upon a trend toward an increase in the number and types of airplanes designed to carry relatively large numbers of passengers. At that time, the FAA considered that continued applicability of Part 23 to small airplanes designed to carry ten or more passengers was no longer in the interest of safety and future generations of these small airplanes should adhere to the level of safety afforded by the requirements of Part 25, irrespective of whether operations were conducted under Part 135 or Part 91. Thus, Amendment 23-10 limiting the number of seats, excluding pilot seats, to nine or less became effective March 13, 1971, and is applicable to normal, utility, and acrobatic category airplanes for which an application for a type certificate is received by the FAA after the March 13, 1971, date.

On August 29, 1977, the FAA issued Notice No. 77-17, (42 FR 43490) Part 135 Regulatory Review Program, proposing, in part, to prohibit the operation, after certain dates, of reciprocating engine or turbopropeller-powered small airplanes not certificated in the transport category and having a passenger seating configuration of ten or more seats. Before the closing date for comments on November 28, 1977, the FAA withdrew this part of the proposal in Notice No. 77-17. The more significant reasons given for the withdrawal are (1) comments on this proposal showed its effect would virtually destroy the commuter airline industry and deprive the general public of needed transportation; (2) the proposal had already disastrously effected the industry; (3) airplane sales had been cancelled and operators had serious difficulty with financing; and (4) the cost of complying with the proposal would exceed 300 million dollars for an industry whose total profits did not exceed 50 million dollars a year.

Consequently, the FAA determined that the proposal should not be retained as part of the proposed new Part 135. The FAA did note that the withdrawal of the proposal did not preclude the FAA from issuing similar proposals in the future due to a change in circumstances nor commit the FAA to any course of action. The FAA encouraged further comments on this issue.

The FAA/Industry Commuter Aircraft Weight Committee submitted a petition to amend the regulations to allow certain small airplanes to be type certificated at maximum certificated takeoff weights greater than the 12,500 pound limitation without complying with the transport category airworthiness requirements of Part 25. Responding to this petition and other needs for improved standards resulting from the Airline Deregulation Act, the FAA initiated a three-phase program for certification and operation of commuter airplanes. The first phase was the issuance of a revised Part 135—Air Taxi Operators and Commercial Operators (43 FR 46 FR 46742; October 10, 1978), which aligned the rules for thoses operations more closely with those of Part 121—Certification and Operations: Domestic, Flag, and Supplemental Air Carriers and Commerical Operators of Large Aircraft. The second phase, initiated by Notice No. 78-14 (43 FR 46734; October 10, 1978), proposed temporary rules stating the additional airworthiness requirements necessary to provide for increased takeoff gross weight and passenger seating capacity of certain existing small, propeller-driven, multiengine airplanes. The outcome of this Notice was the adoption of SFAR No. 41 (44 FR 53723; September 17, 1979), which became October 17, 1979. The third phase established the Light Transport Airworthiness Review, Notice No. 78-17 (43 FR 60846; December 28, 1978) to develop a separate set of airworthiness standards for multiengine airplanes with a maximum gross weight up to 35,000 pounds and a seating capacity up to 30 passengers. Subsequent considerations and recommendations from industry during the Review escalated the maximum weight and passenger capacity limits to 50,000 pounds and 60 passengers for the light transport category airplane. Nevertheless, the FAA terminated the Light Transport Airworthiness Review Program because, based on available information, the expected economic benefits resulting from a new light transport airplane airworthiness regulation would not be realized.

After the expiration of SFAR No. 41, as amended, on October 17, 1981, and termination of the Light Transport Airplane Airworthiness Review, the FAA reinstated SFAR No. 41, with amendments, as SFAR No. 41C, effective September 13, 1982 (47 FR 35150; August 12, 1982), for 1 year and subsequently started development of the commuter category requirements. Accordingly, Notice No. 83-17 (48 FR 52010; November 15, 1983) contained the proposed commuter category requirements.

This rulemaking package was initiated prior to the issuance on October 9, 1986, of NTSB Safety Recommendations A-86-98 through A-86-118, which deal with commuter airplane operating requirements. The FAA has not yet completed its review of those recommendations or developed its position on them. This rulemaking has no relationship with those recommendations and they have not been addressed in this document. If, after further review, the FAA finds it necessary to undertake additional rulemaking, we will do so.

DISCUSSION OF COMMENTS

General

Interested persons were invited to participate in the development of this final rule by submitting such written data, views, or arguments as they may desire to the regulatory docket on or before February 14, 1984. In response to Notice No. 83-17, the FAA received 29 sets of comments.

In general, the comments received address five major issues: (1) past FAA actions relative to airworthiness standards for airplanes of a size similar to those proposed in Notice No. 83-17; (2) the level of safety provided by the commuter category airplane airworthiness standards; (3) required compliance with the minimum standards of the International Civil Aviation Organization (ICAO); (4) different levels of safety for similar 19-passenger airplanes with maximum certificated takeoff weights below 12,500 pounds and above 12,500 pounds; and (5) comments which address specific proposals, or the lack of proposals, given by section number of Part 23.

Two commenters cite past FAA actions as being inconsistent with the proposal of airworthiness standards in Part 23 for type certification of an airplane in the proposed commuter category. One of these commenters oppose the proposal and cities the adoption of Amendment 23-10, effective March 13, 1971, which restricted future Part 23 airplanes to nine seats or less, excluding pilot seats. This commenter notes that, at that time, the FAA considered future airplanes capable of carrying more than nine passengers should be type certificated to Part 25. The other commenter quotes various statements from the notices of the Light Transport Airworthiness Review program and the purpose stated for the proposed Part 24—Airworthiness Standards: Light Transport Airplanes, and questions the FAA action in issuing Notice No. 83-17.

In response to the comment addressing the adoption of Amendment 23-10, the various rulemaking activities subsequent to the adoption of that amendment evidence significant changes in circumstances. Lack of adequate standards resulted in an unworkable situation by requiring all future airplanes capable of carrying more than nine passengers to be type certificated to Part 25. The problems created by that requirement are evidenced by the Light Transport Airworthiness Review Program in which Part 24 was proposed and by the adoption of SFAR No. 41 and its subsequent amendments as interim measures. Amendment 23-10 does, however, continue to be applicable to type certification of normal, utility, and acrobatic category airplanes.

The Light Transport Airworthiness Review Program recognized that application of Part 25 airworthiness standards to a light transport airplane was inappropriate. As noted in Notice No. 78-17 (43 FR 60846, December 28, 1978), which initiated the Review, the FAA proposal for a Part 24 tried to establish a balance between the transport category requirements in Part 25 and the small airplane requirements in Part 23 which would maintain the level of safety believed appropriate for light transport airplanes carrying passengers for hire. The airworthiness standards of Part 24 were initially proposed for an airplane with a maximum seating capacity of about 30 passengers and a maximum weight of 35,000 pounds without regard to the type of powerplants. Upon termination of the Review, the parameters defining the light transport airplane extended to airplanes capable of carrying a maximum of 60 passengers and having a maximum weight of 50,000 pounds.

Based on the cited rulemaking efforts, the FAA does not consider the adoption of the new commuter category and the airworthiness standards for this category of airplane in Part 23 to be inconsistent with past actions by the FAA.

Information available to the FAA resulted in a determination, and industry has concurred, that a need exists for permanent airworthiness standards for an airplane of the size stated in Notice No. 83-17 and that an additional category of airplane should be established within Part 23. The FAA's alternatives were to relax the requirements of Part 25 to accommodate the new category or to propose additional airworthiness standards in Part 23 for the new category. The most appropriate course for the FAA was to propose the integration of additional standards into Part 23. The FAA considers the current airworthiness standards applicable to new type certification applications for normal, utility, and acrobatic category airplanes of Part 23, and the additional airworthiness standards of SFAR No. 41, as supplemented by those airworthiness standards necessary to comply with the minimum requirements developed by the International Civil Aviation Organization (ICAO) in Annex 8, Part III. The ICAO standards apply to airplanes weighing 5,700 kg. (12,566 lbs.) or more and to the carriage of passengers in international air navigation. The airworthiness standards of Appendix A of Part 135 not previously adoped in Part 23, which apply to airplanes with ten or more passenger seats, were also proposed for type certification of commuter category airplanes. The satisfactory service experience of propeller-driven, multiengine normal category airplanes recertificated to the additional requirements of SFAR No. 41 was drawn upon to support this course of action.

Several comments were received addressing the level of safety of the proposed commuter category airplane. As stated in the Notice, the level of safety established by the proposed airworthiness standards for the new commuter category are considered, to the maximum feasible extent, equivalent to those provided by the airworthiness standards for larger airplanes used in air transportation. In this determination, the FAA considered the following: (1) the airworthiness standards of Part 23, including all current amendments, would apply as a type certification basis for the commuter category; (2) the commuter category is limited to propeller-driven, multiengine airplanes and a maximum seating, excluding pilot seats, of 19 passengers; (3) the airworthiness standards for all commuter category airplanes up to and including the maximum certificated takeoff weight of 19,000 pounds must comply with those standards established by ICAO for airplanes weighing 5,700 kg or more, (4) the compartment interior requirements are equivalent to those set forth in Part 25 at the time Notice No. 83-17 was issued, irrespective of maximum weight of the commuter category airplane; and (5) engine fire detector and fire extinguishing systems are required for type certification of any commuter category airplane. The FAA will continue to review the airworthiness standards for commuter category airplanes and propose improvements and updates, when necessary, to maintain the level of safety intended for airplanes to be used by commuter airlines and when shown to be in the public interest.

The FAA received numerous comments supporting the proposal. However, eight of the commenters use the phrase "special commuter category." The Federal Aviation Regulations and predecessor regulations have for many years addressed airworthiness standards for four categories of airplanes; i.e., normal, utility, acrobatic, and transport. This discussion does not include the restricted and limited categories which have specific applicability. The FAA assumes that the commenters are misinterpreting the word "special" if they are using it as a carryover from the temporary Special Federal Aviation Regulation No. 41 which contained the additional airworthiness standards for recertification of certain small airplanes with increases in maximum weight or passenger seats or both. The commuter category is not "special." It is a new category of airplane being established by this rulemaking.

Two commenters oppose mandatory compliance with the ICAO Annex 8, Part III requirements on the basis that, to date, the performance requirements have been applied to SFAR No. 41 certificated airplanes only when it was necessary to meet the international requirements of ICAO Annex 8. They assert that compliance with the ICAO requirements should be optional. One commenter contends that the ICAO rules generally represent the essential elements of Part 25 performance requirements and the inclusion of overly stringent and economically burdensome requirements are not essential to ensure the safety of modern airplanes to which the new commuter category airworthiness standards will apply. Furthermore, one commenter requests that the proposal be revised to restore the current SFAR No. 41 performance requirements; i.e., to permit Part 135 Appendix A performance for commuter category airplanes. In support of the commenter's position, the commenter submits plots showing the number of airports in the United States that could not be served due to the performance limitations of two currently certificated SFAR No. 41 airplanes.

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On the other hand, several commenters, including an airline association, a foreign airplane manufacturer, and foreign civil airworthiness authorities support the proposal that the commuter category airplane comply with the ICAO Annex 8, Part III, requirements. One commenter contends that the performance of commuter airplanes has, in past years, been marginal in cases of engine failure and that the proposal to add ICAO Annex 8, Part III to commuter standards, bringing the commuter airplanes into conformity with international standards, will provide an additional protection and, therefore, endorses the proposal.

Two commenters contend that the provisions of section 1(a) of SFAR No. 41 should be incorporated into the proposed commuter category requirements in Part 23. This would allow type certification of airplanes in the comuter category with ten or more passenger seats (up to 19 seats) and a maximum weight of 12,500 pounds or less by compliance with regulations incorporated in the type certificate and only the additional requirements in Appendix A, of Part 135. This would also result in a dichotomy of the airworthiness standards for commuter category airplanes weighing up to 12,500 pounds and those weighing above 12,500 pounds.

The main argument presented by these commenters is that omission of section 1(a) of SFAR No. 41 from the proposed commuter category rule is inconsistent with the International Civil Aviation Organization (ICAO) standards of Annex 8. The ICAO standards differentiate the airworthiness requirements for airplanes weighing up to 12,500 pounds and those weighing more. Airplanes weighing more than 12,500 pounds must comply with Annex 8, Part III, while those weighing less than 12,500 pounds may comply with lesser requirements.

The FAA does not agree that the current requirements in SFAR No. 41 provide adequate or appropriate requirements for type certification of newly designed airplanes in the new commuter category. The Federal Aviation Act of 1958, as amended, addresses the level of safety in air transportation provided by air carriers in at least two specific sections. First, Section 601(b) states, in part, "...the Secretary of Transportation shall give full consideration to the duty resting upon air carriers to perform their services with the highest possible degree of safety in the public interest and to any differences between air transportation and other air commerce." Secondly, section 419(c) states, in part, "...the Administrator, by regulation, shall establish safety standards (A) for aircraft being used by commuter air carrier . . . Such safety standards . . .shall impose requirements upon such commuter air carriers to assure that the level of safety provided to persons traveling on such commuter air carriers is, to the maximum feasible extent, equivalent to the level of safety provided to persons traveling on air carriers which provide service pursuant to certificates isssued under Section 401 of this title."

The ICAO airworthiness standards proposed for the commuter category airplane are the minimum standards to ensure safety of airplanes over-flying another contracting state. Contracting states, such as the United States, may establish standards which provide a higher level of safety than the ICAO minimum standards. The passenger capacity and proposed commercial service use are more meaningful parameters to delineate airworthiness safety standards than is airplane weight. Associating airworthiness standards with the number of passengers carried is also consistent with the nine passenger seat limitation requirement currently applicable to normal, utility, and acrobatic category airplanes. The proposed airworthiness standards are the minimum required in the interest of safety and form an integral part of the level of safety achieved by air carriers. Therefore, no changes in the proposal are made.

Several commenters contend that the production limitation date of Ocotober 17, 1991, for SFAR No. 41 airplanes should be eliminated and production of currently certificaed SFAR No. 41 airplanes should be permitted for an indefinite period of time.

In response to these comments, we note that SFAR No. 41 was promulgated to meet an immediate need for the emerging commuter airline industry. That SFAR was predicated on the application of additional airworthiness standards for existing type certificated normal category airplanes that had demonstrated a good safety record. At the time SFAR No. 41 and its subsequent amendments were adopted, they provided airworthiness standards which met the mandate of the Congress regarding the safety standards for airplanes used by commuter air carriers. The temporary airworthiness standards of SFAR No. 41 served the purpose for which they were intended and established the necessary level of safety mandated by Congress. In any case, newly manufactured airplanes which are certificated under SFAR No. 41 will not be required to comply with these requirements.

One commenter states that Part 23, as amended, by this final rule should provide for airplanes with ten or more passenger seats and a maximum certificated takeoff weight of 12,500 pounds or less, citing paragraph 1(a) of SFAR No. 41 as the reason for such a provision. Additionally, several commenters contend that certification of airplanes in the commuter category should be permitted by complying only with the additional requirements applicable to the commuter category and those requirements stated in the previous type certification basis of their airplane.

The FAA does not agree that the commuter category should differentiate between airplanes that weigh less than 12,500 pounds and those that weigh more than 12,500 pounds. Furthermore, the FAA has concluded that a certification basis for the new commuter category should include all current amendments of Part 23 plus all of the airworthiness standards of SFAR No. 41 in order to achieve the appropriate level of safety. The proposed requirements for fuel tanks, fire extinguishing systems, fire extinguishing agents, compartment interiors, fuel system components crashworthiness, and landing gears are essential to the level of safety expected of airplanes to be type certificated in the new commuter category, irrespective of the weight of the airplane. Certification of airplanes to only the SFAR No. 41, paragraph 1(a) requirements would permit certification of airplanes with a seating configuration, excluding pilot seats, of 19 or less without complying with the above requirements.

The traveling public is entitled to the protection afforded by these safety requirements regardless of whether the commuter category airplane has a maximum certificated takeoff weight above or below 12,500 pounds. In addition, the FAA has had several airworthiness review programs of the airworthiness standards for Part 23 airplanes. The purpose of these airworthiness reviews has been to improve and update the airworthiness and crashworthiness standards applicable to the type certification of new small airplane designs and many of the airworthiness standards required by paragraph 1(a) of SFAR No. 41 have subsequently been adopted into Part 23 for new designs of airplanes in the normal, utility, and acrobatic categories. These requirements alone are not considered adequate for commuter category airplanes and must be supplemented as set forth in Notice No. 83-17 for commuter category type certification.

The FAA received comments in support of the proposal which contend that the proposal is equivalent to the airworthiness standards of the proposed Part 24 for the light transport airplane. The FAA does not agree that the airworthiness standards for the commuter category airplane are equivalent to those of the recently proposed Part 24. Some of the reasons for this disagreement are the unrestricted use of powerplants, the size, and maximum weight of the proposed Part 24 airplane and airworthiness standards directly related to airplanes of this size.

Six additional commenters in support of the proposal, operators of SFAR-41 airplanes, stated that redesign of the 19-seat commuter airplane to meet the requirements of Part 25 would be cost prohibitive. The information supplied by these commenters is consistent with that provided by commenter to a proposal in Notice No. 77-17 which would have required all airplanes operated under Part 135 after June 30, 1984 to meet Part 25 requirements. That proposal in Notice No. 77-17, comments received on it, and FAA reason for withdrawal of the proposal, is discussed earlier in the Regulatory History portion of this final rule. Based on the comments which resulted in the withdrawal of Notice No. 77-17 and these six comments, the FAA does not plan to propose that existing 19-seat commuter airplanes be redesigned to meet the requirements of Part 25.

One commenter suggests changes to Part 1 to redefine "small aircraft." No justification or reason to support a redefinition of "small aircraft" is offered. The suggested redefinition, therefore, is unnecessary.

Discussion of Comments to Specific Sections of Parts 21, 23, 36, 91, and 135.

The following comments and discussions are keyed to like-numbered proposals contained in the Notice, or to specific sections where the comments address sections not previously addressed in Notice No. 83-17. In Notice No. 83-17, proposals numbered 1 through 59 address Part 23; proposals 60 through 72 address Part 21, proposals 73 through 78 address Part 36, proposal 79 addresses Part 91, and proposals 80, 81, and 82 address Part 135.

Proposal 1—No comments were received in response to the proposed title change to Part 23. The title of Part 23 is adopted as proposed.

Proposal 2—No specific comments were received in response to the proposed amendment of § 23.1; however, general comments related to § 23.1 have been discussed under the previous general comments of this preamble. Section 23.1 is adopted as proposed.

Proposal 3—One commenter contends § 23.3(d) should be revised to provide for airplanes limited to 12,500 pounds maximum takeoff weight and a seating configuration, excluding pilot seats, of ten or more. The FAA does not agree. The airworthiness standards, adopted herein establish requirements for the commuter category, regardless of weight, from less than 12,500 pounds up to and including 19,000 pounds, or passenger seating configuration, excluding pilot seats, not to exceed 19.

One commenter recommends that § 23.3 be amended to require all airplanes used by scheduled air carriers to be certificated as commuter category since, under the present and proposed rules, airplanes of nine or fewer passenger seats will continue to be eligible for certification under existing Part 23 rules and not the enhanced commuter category rules. The FAA recognizes the merit of the comment and will consider additional rulemaking to enhance the level of safety of airplanes used by scheduled air carriers with a passenger configuration of nine or less when shown to be in the public interest or necessary for safety. The FAA considers this comment to be outside the scope of this rulemaking activity and one that cannot be adopted concurrently with these amendments without additional public participation in such a proposal.

Another commenter recommends that § 23.3(d) be changed to add single-engine, turbopropeller-powered airplanes to the commuter category. The FAA does not agree with the inclusion of single-engine, turbopropeller-powered airplanes within the commuter category. While the commenter contends that turbopropeller engines have a record of increased reliability over reciprocating engines, the prospect of a single-engine failure does not provide the level of safety expected from the airworthiness standards for commuter category airplanes which must have the ability for continued safe flight and landing after probable failures, including the failure of an engine.

One commenter questions the rationale and justification which restrict the commuter category to propeller-driven airplanes. The commenter contends that this restriction does not appear to enhance the airworthiness of the commuter category and could unduly restrict innovative designs. The scope of the proposal was limited to integrating into Part 23 the airworthiness standards as set forth in Notice No. 83-17, including those necessary to comply with the ICAO requirements. Since the airworthiness standards proposed in Notice No. 83-17 would apply to propeller-driven airplanes only, these standards are not considered adequate for other propulsion system designs. The comment is not germane to the scope of this final rule.

A minor clarifying change was made to proposed § 23.3(e) by inserting the word "type" before the word "certificated." This makes clear that certification in that paragraph was with reference to type certification and not to airworthiness certification.

It has been past FAA policy to issue an airworthiness certificate for an airplane in more than one category. However, for an airplane type certificated in both the normal and commuter categories, the FAA will not issue an airworthiness certificate for more than one category. This procedure is being established because of significant differences among the airworthiness, maintenance, and operating requirements applicable to normal and commuter category airplanes. Accordingly, for those airplanes that may be type certificated in both the normal category and the commuter category, an applicant may apply for a standard airworthiness certificate as either a normal or commuter category airplane, but not for multiple airworthiness certification in both categories. If the applicant selects airworthiness certification as a normal category airplane, the airplane must be operated as a small airplane with a seating configuration, excluding pilot seats, of nine or less in accordance with the normal category type certificate limitations for the airplane. Alternatively, if the applicant selects airworthiness certification as a commuter category airplane, the airplane must be operated in accordance with the commuter category type certificate limitations for the airplane.

Proposal 4—One commenter states that paragraph 4(a) of SFAR No. 41, as amended, requires the establishment of a maximum zero fuel weight and contends that § 23.25 should include such a requirement. The FAA agrees. Therefore, establishment of a maximum zero fuel weight by the applicant, as required in paragraph 4(a) of SFAR No. 41, is considered necessary and § 23.25 is revised accordingly to assure the airplane design considers the necessary operational limitations with variations between payload and fuel loads.

Proposal 5—One commenter states, for ICAO Annex 8 compliance, that an approach configuration must be selected. The FAA agrees that the applicant should determine the approach configuration since compliance with the airworthiness standards for commuter category airplanes requires performance in the approach configuration. Accordingly, § 23.45(f)(1) is changed by adding the word "approach" following the words "en route" in the requirements for airplane configuration selection by the applicant.

Another commenter recommends a statement of principle as a new paragraph (a) to be added to § 23.45 to read as follows, and subsequent paragraphs renumbered accordingly:

> "(a) The intended level of safety will be achieved only if the performance information, established and furnished in accordance with FAR 23, Subparts B and G, is used in conjunction with the performance operating rules of FAR 135.399 through FAR 135.403."

The commenter proposes revisions to § 135.399 and additional sections to Part 135. The FAA does not agree that a "statement of principle" should be included in § 23.45. The Federal Aviation Act of 1958, as amended, sets forth the requisite policy and principle with respect to airworthiness standards and operating rules for U.S. civil aircraft.

The previous commenter also recommends that § 23.45(f)(3) include reference to the "takeoff flight path" unless it is covered by ". . .the critical-engine-inoperative takeoff performance," and the landing distance. The FAA agrees with the recommendation and, for clarity, this general performance requirement has been revised to include "takeoff flight path" and "landing distance" in § 23.5(f)(3). Since § 23.1583, Operating limitations, requires this information to be included in the Airplane Flight Manual (AFM) for safe operation and since § 23.75 includes requirements for determining landing distances, § 23.45(f)(3) should include requirements that make it clear that the applicant must establish these procedures.

In addition, the commenter recommends that § 23.45(f)(4) be revised to include the establishment of procedures for conducting a missed approach and the requirement for these procedures be stated in the Airplane Flight Manual in accordance with the requirements of §§ 23.1585 and 23.1587. The FAA agrees with the recommendation. Since new §§ 23.67(e)(3) and 23.77(c) contain requirements for the establishment of condition for the execution of a missed approach and balked landing and § 23.45(f)(4) as proposed in Notice No. 83-17 requires the establishment of procedures for the execution of balked landings, the procedures for executing a missing approach should also be included in this amendment of § 23.45(f)(4). These procedures are required to be in the Airplane Flight Manual by § 23.1585(a). The FAA considers this addition as an elaborative, nonsubstantive, nonsubstantive change to § 23.45(f)(4).

One commenter contends that §§ 23.45 through 23.77 should reflect the standards contained in §§ 25.101 through 25.125 for the following reasons: (1) the proposed wording of § 23.55, Accelerate-stop distance, does not incorporate V_{EF} or the time delays for engine failure recognition and reaction by the pilot as required by Part 25, and (2) proposed § 23.57, Takeoff path, would require a 2.0 percent steady state climb gradient. This is an improvement over existing regulations, but the commenter is of the opinion that 2.4 percent should be required, contending this gradient is very important to the level of safety attained. The commenter contends that the level of safety is not the result of tailoring each takeoff for the most critical condition, but of establishing a floor such as the 2.4 percent gradient. A floor gradient covers those anomalies not accounted for by the takeoff equation; e.g., actual runway gradient rather than average, runway outside air temperature, windshear, drag from brakes and other contaminants, engine power degradation, instrument errors, and weight and balance errors. In addition, this commenter states that if the takeoff is predicated upon clearing obstacles by some fixed value; e.g., 35 feet, the end result will be disastrous because these anomalies may contribute to a failure to clear the obstacle.

The FAA does not agree with the comment that §§ 23.45 through 23.77 should be replaced with the requirements of §§ 25.101 through 25.125. The requirements of §§ 23.45 through 23.77 which require a 2-percent second-segment climb gradient are the standards for airplanes recertificated to SFAR No. 41 as supplemented by those requirements necessary to comply with the flight performance standards of ICAO Annex 8, Part III. Those recertificated airplanes have a good safety record and retaining those requirements as well as adopting the enhanced flight performance requirements of ICAO Annex 8, Part III, provide the safety level expected of the new airplane designs permitted by this new category. Furthermore, this final rule includes many of the Part 25 requirements suggested by this commenter.

Another commenter states that the proposed flight requirements for this category of airplane attain the appropriate level of safety of commuter category airplanes. The commenter states that the additional requirements of SFAR No. 41C, which brought airplanes over 12,500 pounds into compliance with ICAO Annex 8, Part III, now appear to be applicable to any 10- to 19-seat airplane, even if under 12,500 pounds. The commenter supports this action.

In response to this comment, to clarify what appears to be a misconception on the part of the commenter, the additional requirements of SFAR No. 41C did not require airplanes of over 12,500 pounds to comply with the requirements of ICAO Annex 8, Part III. The ICAO Annex 8 requirements are applicable only if an applicant desires to comply with them for certification to SFAR 41C; i.e., compliance is not mandatory as implied by the commenter. The commenter correctly understands that the ICAO Annex 8 requirements are applicable to any commuter category airplane, even if under 12,500 pounds. Accordingly, ICAO Annex 8 requirements, as adopted by this amendment, are applicable to any commuter category airplane, even if the seating configuration, excluding pilot seats, is less than ten or the airplane has a maximum weight of less than 12,500 pounds and is to be type certificated in the commuter category.

Proposal 6—The comments received in response to the proposed amendment of § 23.51, were discussed under Proposal 5. Accordingly, § 23.51, is adopted as proposed.

Proposal 7—One commenter agrees with the FAA decision to apply essentially Part 25 standards to takeoff performance criteria for commuter category airplanes. This commenter suggests that a significant simplification of § 23.53, Takeoff speeds, could be achieved if it were based more closely on the existing requirements of § 25.107 and the Joint Airworthiness Requirements (JAR) 25.107. A proposed simplification was offered. (NOTE: The Civil Airworthiness Authorities of certain European countries have agreed common to comprehensive and detailed airworthiness requirements referred to as the Joint Airworthiness Requirements (JAR) with a view to minimizing type certification problems on joint ventures, and also to facilitate the export and import of aviation products.) The FAA agrees and § 23.53(c) has been simplified by deletion of subparagraph (c)(4)(ii) and (iii) which are included in subparagraph (c)(1) of this section.

Another commenter notes the absence of a requirement for the determination of the minimum unstick speed, V_{MU}, and the resultant absence of V_{MU} consideration in the determination of the rotation speed, V_R. A determiniation of V_{MU} was not a requirement for a type certification under SFAR No. 41 and the FAA considers the requirement that V_R not be less than 1.10 V_{S1} or 1.10 V_{MC} as an adequate safeguard. In addition, another commenter supports this FAA position and notes that the V_R requirement is more stringent than that required for transport category airplanes. In addition, the determination of V_{MU} typically requires addition of equipment to the airplane to conduct the tests and the FAA considers the additional tests as unnecessary for commuter category type certification.

Proposal 8—One commenter states that although the proposed requirement of § 23.55, Accelerate-stop distance, have been accurately adopted from Part 135, Appendix A, § 5(c), this section has always conflicted with the definition of V_1 as a decision speed. The commenter suggests that § 23.55(a)(2) be changed to read "...at which V_1 is reached assuming that, in the case of engine failure, the pilot decides to stop at the speed V_1." Another commenter contends that the proposal needs to be modified since it is not entirely consistent with the relationship between V_1 and V_{EF}, as stated in § 23.53(c)(1)(iv). This commenter suggests that the language used in § 23.55(a) emulate the existing requirements of § 25.109(a) and JAR 25.109(a). The FAA agrees with the first commenter regarding the conflict with the definition of V_1 as a decision speed and also with V_1 and V_{EF} as proposed in § 23.53(c)(1)(iv). These apparent conflicts can be resolved by more clearly setting forth the series of events necessary to determine the accelerate-stop distance requirement. Section 23.55(a) is revised accordingly and the revision is a nonsubstantive change to the requirement as proposed.

One commenter suggests § 23.55(b)(3) be changed to read "...no more than average skill is required..." instead of "...exceptional skill is not required..." The commenter does not provide a reason for the suggestion. Section 25.109(b)(3) has the same wording as the proposal in § 23.55(b)(3) and the FAA is not aware of any interpretive problems with the Part 25 requirement. Accordingly, § 23.55(b)(3) is adopted as proposed in Notice No. 83-17.

Proposal 9—Two commenters note that § 23.57 is patterned after the requirements of § 25.111, and that § 23.57(c)(2) includes the "second segment" climb requirement. They contend that this approach to stating the requirements may ultimately cause disputes; therefore, it is more appropriate to include the requirement in § 23.67, Climb: one engine inoperative. The FAA agrees and the words "at a steady gradient of not less than two percent, and" are deleted as proposed in § 23.57(c)(2) and the "first segment" and "second segment" climb requirements are added to § 23.67 as recommended by these commenters.

One commenter contends the takeoff path should terminate at 1,000 feet above the takeoff surface as stated in Part 135, Appendix A, instead of 1,500 feet as proposed in § 23.57(a) and the final rule should delete all en route climb gradient requirements other than a 1.2 percent standard. The FAA does not agree. First, airplanes recertificated to SFAR Nos. 41B and 41C which comply, at the election of the applicant, with the ICAO requirements, the ICAO 1,500-foot takeoff path requirement applies instead of a 1,000-foot takeoff flight path required in Part 135, Appendix A. Furthermore, commuter category airplanes are to comply with the ICAO requirements. Secondly, en route climb gradient requirements other than 1.2 percent were required by an SFAR 41 amendment which set forth the requirements for ICAO compliance. These requirements are necessary in the commuter category standards to comply with the ICAO airworthiness standards.

Another commenter contends the 2-percent climb gradient to 400 feet, as stated in Part 135, Apendix A, paragraph 6(b)(2), has been interpreted to be the same gradient required at airfield altitude. This commenter cites § 25.121(b) which was not referenced in SFAR No. 41B to satisfy compliance with ICAO requirements. The commenter states the same criteria currently contained in Part 135, Appendix A, should be retained for § 23.57(c)(2) and further contends that no reason is evident for changing that regulation. The FAA does not agree. The proposed climb gradient adopted in § 23.67 more clearly identifes the requirement for climb with one engine inoperative. The climb gradient is necessary to comply with the ICAO requirements and the level of safety expected on new airplane designs of the commuter category.

Another commenter contends that applications for type certification in the commuter category, for airplanes with more than two engines, are likely to be rare and some simplification of § 23.57 and other requirements might be achieved by the deletion of requirements relating to three- and four-engine airplanes. The FAA concludes, however, that in cases where an applicant is designing a three- or four-engine airplane, the applicant should know the applicable requirements for its design. Therefore, the requirements for three- and four-engine airplanes should remain in the final rule. Accordingly, the proposal regarding three- and four-engine airplanes is adopted as proposed.

One commenter understands that FAA policy, with respect to transport category airplanes, is to deny performance credit for manual propeller feathering before the airplane reaches a height of 400 feet above the takeoff surface and suggests that § 23.57(c)(4) be changed to include the commenter's understanding of this policy as a clarification of the use of propeller feathering in determining commuter category airplane performance. The commenter's understanding is correct. Furthermore, the FAA used Part 135, Appendix A, paragraph 6(b), Takeoff climb: one-engine-inoperative, as one of the reference sources for the § 23.57(c)(4) proposal. Paragraph 6(b) states, in part, ". . .the remaining engines at the maximum takeoff power or thrust, and the propeller of the inoperative engine windmilling with the propeller controls in the normal position, except that if an approved automatic feathering system is installed, the propellers may be in the feathered position:. . ." To clarify the condition for which use of propeller feathering can be regarded as a configuration change, the word "automatic" will procede the word "propeller" in the final revision of § 23.57(c)(4). This action is not based upon the policy applied to transport category airplanes, but rather upon the requirement stated in the additional airworthiness standards of Part 135, Appendix A, which was to be integrated into Part 23 for commuter category airplanes as indicated in Notice No. 83-17.

Proposal 10—One commenter states that this new § 23.59 should be applicable for ICAO Annex 8 compliance and should apply only when the applicant elects such compliance. the FAA disagrees. The issue of ICAO Annex 8 compliance has been discussed previously as it concerns the level of safety expected of new airplane designs for the commuter category.

Another commenter supports the proposal but, nonetheless, suggests a change based upon material contained in Advisory Circular, Joint (ACJ) No. 25.113(a)(2) for takeoff with all engines operating. (NOTE: AJC advisory material is developed in conjunction with the JAR airworthiness standards.) The commenter contends that requirements of takeoff and accelerate-stop performance data are incomplete unless they include sufficient information to allow the rational downward adjustment of V_1 when taking off from a wet runway. The FAA does not agree. The requirements, as stated, are essentially equal to those applied to transport category airplanes as cited in § 25.113(a). The FAA is not aware of any significant problems in applying the requirements of that section nor of any unsafe conditions arising from application of its requirements either to transport category airplanes or to the SFAR No. 41 airplanes which comply with the ICAO requirements.

One commenter, while stating that § 23.59(b) is a desirable addition, contends a new speed, V_{LOF}, is introduced. In addition, the commenter suggests the V_R should be substituted for V_{LOF} since this would result in a more conservative, shorter takeoff run. The FAA does not agree that a new speed, V_{LOF}, has been introduced. Section 23.51(b) currently states "For multiengine airplanes, the lift-off speed, V_{LOF}, may not be less than V_{MC} determined in accordance with § 23.149." In addition, the FAA does not agree that V_R should be substituted for V_{LOF} because V_R is the rotation speed for takeoff and V_{LOF} is the speed at which the airplane leaves the takeoff surface after attaining the rotation speed, V_R.

Another commenter contends that few airport authorities declare clearways and that few operators have the resources to carry out independent surveys. Operators should be permitted to use defined clearways when available and permitted by the operating rules. Takeoff distance limitations would result in a unwarranted penalty at airports where clearways have been defined by the responsible authorities. Accordingly, the FAA is adopting the requirements as proposed.

Proposal 11—One commenter states that the new § 23.61, only applies to ICAO Annex 8 compliance and should apply only when the applicant elects such compliance. The FAA disagrees. The issue of complying with the requirements of ICAO Annex 8 has been previously discussed.

Another commenter recommends deleting the requirements applicable to three- and four-engine airplanes. The FAA disagrees. See the discussion in Proposal 9.

Proposal 12—One commenter contends that the proposed change to § 23.65 concerns all-engine climb and, except for balked landing climb, Part 135, Appendix A, is not concerned with all engine climb. Accordingly, the commenter recommends the deletion of proposed paragraph (d) to § 23.65. This commenter contends that the source referenced for the proposal is in error. Another commenter contends that the proposed additional paragraph (d) is superfluous because: (1) a requirement to furnish performance data in the Airplane Flight Manual is contained in § 23.1587, Performance information; (2) proposed new paragraph (a) to § 23.45, General, requires all performance requirements to be met at ambient atmospheric conditions; and (3) the existing § 23.21(a) requires all flight requirements to be met "at each appropriate combination of weight and center of gravity. . .for which certification is requested." The FAA has reexamined the proposal, considered the comments made, and does not agree with the commenters' contentions. The requirement states that the performance data must be determined. The information requirement by § 23.1587 cannot be furnished until it is determined as required by § 23.65(d).

Proposal 13—One commenter states that proposed § 23.67(e) requires unwarranted reliance on the takeoff path requirements of proposed § 23.57 for one-engine-inoperative climb requirements. This commenter contends that the proposed regulation can be interpreted as meaning either that the takeoff with the landing gear extended requirement of Part 135, Appendix A, paragraph 6(b)(1) has either disappeared or may be demonstrated in ground effect and that neither case is considered satisfactory. This commenter recommends § 23.67(e) should be rewritten in a manner that follows the pattern of Part 135, Appendix A, paragraph 6(b) in order to be more easily understood.

Additionally, another commenter states that the proposed § 23.67(e)(2) seems to be redundant with proposed § 23.57(c)(3)(i) for two-engine airplanes and less restrictive than proposed § 23.57(c)(3)(iii) for three- and four-engine airplanes; therefore, proposed § 23.67(e)(2) might be deleted.

One further commenter states that no reason has been offered for failing to include the takeoff climb, landing gear extended, requirement of Part 135, Appendix A, in this rule and contends that § 25.121(a) and JAR 25.121(a) have always had such a requirement. This commenter asserts that § 23.57(c)(1) is not an adequate substitute because the takeoff climb with the landing gear extended should form a part of the takeoff weight, altitude, temperature (WAT) limitation and the "second segment" climb should also be included in § 23.67 instead of § 23.57. This commenter also states that, as discussed in the comment to § 23.57, the "second segment" takeoff climb with the landing gear retracted should also be located in § 23.67 since this, too, forms a part of the takeoff WAT limitation. In addition, this commenter states that by referencing § 25.1533(a)(1), it is clear by analogy with § 25.121(c), that proposed § 23.67(e)(2) forms the third component of the takeoff WAT limitation. This commenter submitted a rewrite of § 23.67(e) for consideration.

The FAA thoroughly considered the comments received along with the requirements of proposed § 23.67(e). The FAA agrees that the requirements should be rewritten to be more easily understood. The removal of the requirements for one-engine-inoperative climb in the takeoff from proposed § 23.57 and the insertion of that requirement in § 23.67 will meet this objective.

One commenter contends that a need exists for a further requirement similar to § 25.1533(a)(1) and JAR 25.1533(a)(1), which calls for a performance operating limitationn to be established; i.e., the maximum takeoff weight as a function of altitude and temperature, at which compliance can be shown with the minimal climb gradient of proposed § 23.67(e). The FAA considers that the further requirement is encompassed adequately within the proposed requirements of § 23.1583(c)(3)(iii). This commenter contends that accepting a lower standard for the "second segment" climb is difficult to defend and also asks why there is no increase in values for three- and four-engine airplanes. The FAA considers the "second segment," 2-percent climb gradient for two-engine airplanes as the minimum standard based upon the satisfactory service experience with two-engine airplanes recertificated to SFAR No. 41. The FAA, however, reviewed this comment and agrees that a minimum standard should be established for three- and four-engine airplanes. Accordingly, in order to clarify this section and make it consistant with other proposed sections in this rulemaking action, § 23.67(e)(1)(ii) must include appropriate climb gradients for three- and four-engine airplanes. Also, corrections have been made to §§ 23.67(e)(1)(i) and 23.67(e)(2) by including appropriate three- and four-engine provisions.

One commenter contends that a need exists for a knowledge of the airplane's net climb/descent gradient with one engine inoperative in order to establish compliance with the performance operating rules relating to en route flight proposed by the commenter. The commenter asserts that this need is not met by existing § 23.67 and a proposed wording for a new section is offered. The FAA does not agree. The proposed requirements meet the en route performance operating rules of Part 135. Accordingly, the proposed section from this commenter has not been adopted.

Comments which are subsequently discussed on Proposal 15 notes that the proposed requirements for approach landing climb were misplaced under § 23.77. As discussed under that proposal, the approach landing climb requirements proposed for § 23.77 have been relocated to § 23.67(e)(3).

Proposal 14—One commenter contends that the requirements of § 23.75, even as amended by proposed new paragraph (g), are inadequate in that they fail to address landing with one engine inoperative. As in the case of evaluation of takeoff performance, a clearer presentation of the relevant requirements can be achieved if the speeds and distances are considered in separate sections. As suggested text for a new requirement of reference approach speeds in offered. This commenter proposes that the landing field length requirement proposed by that, inasmuch as it includes consideration of the all-engines-operating and the one-engine-inoperative cases, is more complex than that proposed in Notice No. 83-17. The commenter notes that higher ambient temperatures dictate greater landing distances and the effect is amplified if credit for reverse thrust is allowed in accordance with existing § 23.75(f). The FAA does not agree that the proposed requirements are inadequate or that there is a need to separate the landing speeds and determination of landing distances into separate sections. The requirements, as proposed, are essentially the same as those applied to transport category airplanes for Part 25 type certification. The comment addressing ambient temperature as one parameter against which landing distances should be determined is well taken. However, § 23.1583, Operating limitations, as proposed, requires as a limitation, the maximum landing weight for each altitude, ambient temperature, and required landing runway length within the range selected by the applicant. Section 23.75 is designed for test purposes and the affect of ambient temperature on the landing distance is calculated in accordance with § 23.1583. Therefore, no change is being made to the proposed requirement.

One commenter contends that consideration of wind in § 23.75(g)(1) is superfluous and should be deleted because of wind consideration in § 23.75(g)(3). Wind condition analysis is set forth in

§ 23.75(g)(3), as proposed. The requirement that wind conditions must be considered is set forth in § 23.75(g)(1). These paragraphs perform different functions, therefore, the word "wind" in § 23.75(g)(1) is not considered superfluous. Section 23.75(g)(1) is adopted as proposed.

Proposal 15—One commenter states that in order to maintain the Part 25 and JAR 25 format, the balked landing climb requirements, for all categories of airplane should be transferred to § 23.65, Climb: All engines operating. The FAA does not agree. This commenter contends that the balked landing climb gradient minimum for commuter category airplanes should not be greater than the 3.2 percent climb gradient required for transport category airplanes. No supporting information was given concerning the inappropriateness of the balked landing climb gradient and that portion of the proposal is, therefore, adopted as proposed.

The comment is made that the minimum speed of 1.10 VS1 is considered grossly inadequate since it implies an unacceptable erosion of stall speed margin and/or a need for a significant acceleration if the flaps are retracted from the landing position early in the maneuver. The contention, however, is that a climb initiated at precisely the landing approach speed has the characteristic of being slightly conservative, since climb performance is likely to improve slightly should the speed fall below VREF (reference speed) in an operational maneuver. This commenter offers a rewrite of the proposal. The FAA does not agree that the 1.10 VS1 speed is inadequate as the minimum for this balked landing climb speed. Similar requirements have been applied to airplanes certificated under SFAR No. 41, and these airplanes have safely operated under the current rules.

One commenter contends that the proposal has two problems: (1) the proposal addresses the approach climb and is misplaced under § 23.77. Balked landing, which has a very exact meaning; and (2) the requirement should apply only to ICAO Annex 8 compliance and should be deleted or made optional. The commenter states that the approach climb requirement applies with the landing gear retracted and flaps in the approach position and the proposal should be clear that the landing gear is in the retracted position. Another commenter notes this and also suggests that § 23.67 Climb: one engine inoperative, includes the requirement for approach landing climb instead of the section concerned with the balked landing requirements. The FAA agrees that the approach-landing climb more appropriately should be cited as a one-engine-inoperative climb requirement and is being placed in § 23.67(e)(3) for those requirements. As indicated previously, the FAA does not agree that the approach landing climb requirement should be deleted or optional. Accordingly, the requirement for approach landing climb is placed in amended § 23.67 instead of § 23.77 in substantially the same form as proposed in Notice No. 83-17.

Another commenter states that proposed § 23.77(c)(2), although adopted substantially unchanged from § 25.121(d) and JAR 25, is an unsatisfactory requirement primarily due to the operationally unrealistic speed at which the climb gradient minimum may be met. The commenter proposes an existing ICAO Airworthiness Technical Manual standard which possibly avoids this and other purported shortcomings of § 25.121(d) and JAR 25.121(d). The contention is that the proposal has the merit of ensuring compatibility, down to decision heights of 200 feet, with the ICAO PANS/OPS 1:40 go-around obstacle profile and offers greater flexibility in terms of configuration changes. Therefore, the proposal is not necessarily any more stringent than § 25.121(d) or JAR 25.121(d). While the proposal of the commenter appears to have merit, it introduces several requirements which need further consideration. The requirements of § 23.77(c)(2) as proposed in Notice No. 83-17 have been applied in numerous type certification programs and no adverse experience with such application has been offered. Accordingly, the proposed requirements of § 23.77(c)(2) are adopted in § 23.67, Climb: one engine inoperative, as recommended by the commenters.

Two comments were received on the issue of minimum control speed on the ground, VMCG. One commenter questions the lack of a requirement to determin VMCG. Another commenter states that to provide an adequate constraint on the lowest value of VEF with which V1 may be associated, the inclusion in § 23.149 of a definition of the minimum control speed on the ground is necessary. A text based upon § 25.149(e) was proposed by this commenter. The FAA recognizes the merit in the suggestion; however, based upon experience with recertification of airplanes to the requirements of SFAR No. 41, a requirement for determining the minimum control speed on the ground, VMCG, is not necessary at this time.

One commenter contends an adequate definition of the reference landing approach speed with one engine inoperative depends on the definition of the minimum control speed during landing approach with one engine inoperative, V_{MCL-1}. The contention is the minimum control speed with one engine inoperative is needed to maintain adequate lateral and directional control in the event of a one-engine-inoperative approach being discontinued. A text based upon JAR 25.149(g) is offered by this commenter. The FAA does not agree because the requirements of § 23.67 which relate to approach landing climb must be met for type certification. The FAA is not aware of any adverse experience because of the lack of such a determination, nor was any data submitted to support the contention. Furthermore, such a requirement has not been required for recertification of airplanes to SFAR No. 41.

One commenter states that the required rates of roll of § 23.157, at takeoff and during the approach, which result from the application of the formula contained in paragraphs (a) and (c) are not disputed. With the increase from 12,500 pounds to 19,000 pounds for the maximum takeoff weight of commuter category, however, these formulas yield rates of roll somewhat lower than designers would wish to achieve or pilots perceive as adequate and are lower than what is considered acceptable in ACJ 25.147(c)(2) and ACJ 25.147(e) for transport category airplanes. This commenter contends that this problem can readily be resolved by a proposed language change to § 23.157(a) and (c). The FAA does not agree that § 23.157 should be revised. The requirements of § 23.157 are the minimum rates of roll and designers may increase the rates of roll for their airplanes if they choose. Therefore, § 23.157 is an adequate minimum standard for commuter category airplanes and no change is being made to the existing requirement.

Proposal 16—One commenter contends that the proposal appears to provide a lower standard for commuter category airplanes that is applied to normal category airplanes and that the current requirements of § 23.161(c)(2) appear adequate. Another commenter states that since most commuter category airplane operations would be conducted under instrument flight rules (IFR), reducing control forces to zero (trimmed flight) under most flight conditions is important. This commenter contends that requiring the airplane to be in trim, laterally and directionally, at only one speed is adequate. A proposed text for § 23.161(b)(2) is offered by this commenter. The commenter also suggested that the requirements of § 25.161(d) be added to the rule. In addition, this commenter states that with the current advances in the design of commuter category airplanes, an out-of-trim requirement, similar to § 25.255 should be included in Subpart B-Flight. Another commenter notes that the proposal is unclear in that it appears to allow a 10-pound, out-of-trim force under the 3-degree approach requirement for commuter category airplanes. The FAA has reexamined the proposal and considered each of the comments received addressing the proposed changes to § 23.161. The FAA agrees with the comment that the current requirement of § 23.161(c)(2) is an adequate minimum standard and consequently withdraws the proposed change for § 23.161(c)(2). The FAA does not agree that, as a minimum airworthiness standard, commuter category airplanes should be required to be in trim laterally and directionally at speeds other than that stated in § 23.161(b), as proposed. The FAA is not aware of any adverse experience concerning the lack of requirements at other speeds for the commuter category size airplanes. With the exception of lateral trim, the FAA considers the current requirement of § 23.161(d) substantially equivalent to § 25.161(d) and no adverse experience has been shown because of the lack of a lateral trim requirement in § 23.161(d). The FAA does not agree that a requirement is needed similar to § 25.255, Out-of-trim characteristics, for commuter category airplanes. The background indicates the requirement was promulgated because of more rapid fuel burnoff with rapid center of gravity shifts in transport airplanes, and due to new designs for handling aerodynamic balance by fuel transfer for normal operations. The FAA is not aware of any adverse service experience because of the lack of such a requirement for airplanes limited to a size approaching that of the new propeller-driven commuter category. The FAA concludes, therefore, a requirement similar to the out-of-trim requirement in § 25.255 is unnecessary.

Proposal 17—No comments were received pertaining to the proposed amendment of § 23.173, Static longitudinal stability. Accordingly, the requirement is adopted as proposed.

Proposal 18—One commenter contends that proposed § 23.175(b)(1)(i) is incorrect and current § 23.175 language more accurately describes the section intent and should read as follows: "The speed need not be less than $1.4V_{S1}$ for commuter category airplanes, or $1.3V_{S1}$ for other categories."

Another commenter states that since § 23.1583(a)(3)(iii) requires speed limits for commuter category airplanes to be in terms of VMO/MMO the existing § 23.175(b)(1)(i) does not need to be changed since the speeds are covered adequately by existing § 23.175(b)(1)(iii). This commenter states that since § 23.21(a) requires all "flight" requirements to be met "at each appropriate combination of weight and center of gravity within the range of loading conditions for which certification is requested," the proposal to evaluate the cruise static longitudinal stability of commuter category airplanes at the maximum takeoff weight is redundant and unnecessary. In addition, this commenter states that the requirement for static longitudinal stability in the cruise configuration of Part 135, Appendix A, paragraph 9(b) has in the past been viewed as a replacement for the high-speed and low-speed cruise static longitudinal demonstrations of § 23.175(b). Since only minor changes to § 23.175(b) have been proposed, an explanation and clarification is needed. The FAA has reexamined the proposal, the requirements of Part 135, Appendix A, § 9(b) (which is the cited source for the proposal), and the comments received. The proposal needs to be revised to more clearly express the requirements set forth in the cited source. Accordingly, § 23.175(b) is revised and adopted to achieve this clarification of the high speed cruise requirement for commuter category airplanes.

Proposal 19—No comments were received to the proposal. Accordingly, § 23.333 is amended as proposed.

Proposal 20—No comments were received to the proposal. Accordingly, § 23.335 is amended as proposed.

Proposal 21—No comments were received to the proposal. Accordingly, § 23.337 is amended as proposed.

Proposal 22—No comments were received to the proposal. Accordingly, § 23.349 is amended as proposed.

Comment to § 23.397. For commuter category airplanes, one commenter contends that the Footnote 1 to the table of forces in § 23.397 should be changed to read as follows: ". . . the specified maximum values must be increased linearly with weight to 1.35 times the specified values at a design weight of 19,000 pounds." This commenter suggests a review of CAR 3.212 for the intent of the footnote. Upon review of CAR 3.212 and earlier requirements, the FAA finds that it was included prior to establishment of a 12,500 pound weight limit for small airplanes and called for the provided maximum control forces at 5,000 pounds to be increased linearly with weight by a factor of 1.0 at 5,000 pounds to a factor of 1.5 at 25,000 pounds. This footnote continued to read the same in CAR 3 after the adoption of the 12,500 weight limitation by Amendment 3-10, effective May 16, 1953. When CAR 3 was recodified into Part 23, this note was revised to call for the maximum forces to be linearly increased with weight to 1.18 times the specified values at a design weight of 12,500 pounds which is the factor that would have been obtained from the linear increase called for in the CAR 3 footnote.

The review of CAR 3.212 has shown that the recommended changes would only identify and continue provisions which have been required for airplanes of this size under previous airworthiness standards. Since this recommended change is consistent with previously applied airworthiness standards and will be clarifying by providing the value of the linearly increased factor at the new maximum design weight of 19,000 pounds, the FAA agrees with the contention of this commenter. Footnote 1 to § 23.397 is amended to the extent that the linear increase must be to 1.35 times the specified values at the maximum permissible weight of 19,000 pounds for the commuter category airplane.

Proposal 23—No comments were received to the proposal. Accordingly, § 23.443 is amended as proposed.

Comment to § 23.561. For commuter category airplanes, one commenter notes that no proposal has been made to strengthen the maximum load factors of § 23.561 associated with emergency landing conditions. This commenter contends that the ultimate inertia forces contained in § 23.561 are far below the level the human body is capable of withstanding. The commenter cites the National Transportation Safety Board (NTSB) 1981 report entitled "Cabin Safety in Transport Category Aircraft" as the source for this information. In response to this comment, the purpose of the proposal was not to reevaluate the maximum load factors associated with emergency landing conditions for all airplanes to be type certificated pursuant to Part 23 at this time. The FAA is considering a revision to the requirements of § 23.561 within the framework of the Part 23 Airworthiness Review. The comment is beyond the scope of Notice No. 83-17 and cannot be acted on as a part of this rulemaking.

Proposal 24—One commenter's opinion is that the structural cornerstone of the safety objectives for transport category airplanes is the requirement that structure should be designed to be damage tolerant unless it can be demonstrated, for particular structural features, that this is impractical. In the latter case, according to the commenter, a safe life evaluation must be made using appropriate scatter factors, and, in practice, this has meant that each primary structure, apart from the landing gear, is required to be damage tolerant, Consequently, catastrophic failures due to fatigue, corrosion, or accidental damage would be avoided. The commenter contends that the NPRM, as presented, allows but does not encourage the adoption of the damage tolerance approach to long-term structural integrity. The comment is made that while the safe-life approach is still valid for the majority of airplanes presented for certification under Part 23 which, because of their low utilization, will never approach their theoretical life limits or which can draw upon a long history of satisfactory service experience on similar designs, the safe-life concept is inappropriate for new commuter category airplanes which will be subjected to a more intensive utilization which equals or exceeds the usage attained by larger transport airplanes. The commenter states that the additional protection against catastrophic structural failure due to corrosion, stress corrosion, accidental damage, or discrete source damage which can accure from a damage tolerant design policy will bring those safety benefits necessary to meet the FAA safety objectives for this type of airplane. The FAA recognizes the merit of a damage tolerant design; however, the service experience with airplanes recertificated to SFAR No. 41 with their corresponding high utilization does not support the need for a mandatory damage tolerant design philosophy for commuter category airplanes.

Proposal 25—No comments were received to the proposal. Accordingly, § 23.677 is amended as proposed.

Proposal 26—No comments were received to the proposal. Accordingly, § 23.721 is amended as proposed.

Proposal 27—No comments were received to the proposal. Accordingly, § 23.783 is amended as proposed.

Comment to § 23.785. Section 23.785, Seats, berths, safety belts, and harnesses. One commenter contends that the problem of inadequate seat strength is well known, and this is an opportunity to bring the requirements closer to reality. The FAA is aware of the possibility that seat-strength requirements in certain areas should be enhanced and it is engaged in research aimed at proposing realistic and attainable dynamic criteria for all seats in small airplanes. To propose requirements before this research is completed, or has at least progressed to the point that realistic criteria are available for application in type certification programs would be premature.

When Notice 83-17 was issued proposing the addition of a commuter category airplane to Part 23, the applicable amendment of Part 23 at that time required the installation of a seat belt and shoulder harness for the front two seats and seat belts for all additional seats. Subsequent to the issuance of Notice No. 83-17, the FAA, in response to a petition for rulemaking, proposed the mandatory installation of shoulder harnesses at all seats in normal, utility, and acrobatic category airplanes with a passenger seating configuration, excluding pilot seats, of nine or less. Amendment 23-32 (50 FR 46872, November 13, 1985) adopted the proposals substantially as set forth in Notice No. 85-11 and because final action had not occurred on the commuter category airplane proposals, the above identified occupant restraint requirements applicable at the time the commuter category airplane was proposed were removed from § 23.785(g) and replaced by those requirements in Amendment No. 23-32. Since these later adopted requirements do not address the commuter category airplane, the deleted occupant restraint requirements are being reinstated for commuter category airplanes in § 23.785(g)(2) and the requirements adopted by Amendment No. 23-32 applicable to normal, utility, and acrobatic category airplanes are designated in § 23.785(g)(1).

The FAA is considering additional cabin safety and occupant protection requirements for the commuter category airplane and will initiate appropriate rulemaking action to address this issue after a thorough study of the need and substance of such additional requirements identified from the study.

Proposal 28—One commenter states that the proposed § 23.787(g)(2) should read, ". . . in paragraphs (a), (b), and (f) of this section." The FAA agrees with the comment and the addition of paragraph (f) clarifies that the requirement applies to baggage compartments as well as cargo compartments in commuter category airplanes since Part 23 does not distinguish between cargo and baggage compartments.

Another commenter contends that the cargo compartment regulations are insufficient in that most designs have only a porous bulkhead aft and closed inaccessible areas forward. The commenter states that no design for fire retardation of fire extinguishing in these compartments exists and the requirement should incorporate the standards of § § 25.855 and 25.857. In support of this comment, the commenter states that in the last 3 years alone, one commuter air carrier had four incidents of smoke/fire in unprotected cargo compartments in SFAR No. 41 airplanes. These incidents were caused by various devices shipped by passengers. The contention is that there was no way the crew could have reached a compartment to extinguish a fire if it had occurred. The FAA does not agree that the standards of § § 25.855 and 25.857 should be adopted for commuter category airplanes. Amendment 23-14, effective December 20, 1973, requires that cargo compartments in all Part 23 airplanes be constructed of materials which are at least flame resistant. Not all cargo compartments in Part 25 airplanes are required to have fire extinguishing provisions, specifically Class D cargo compartments. The FAA considers the requirements as proposed in Notice 83-17 for cargo compartments in commuter category airplanes sufficient. Therefore, the additional requirements applicable to commuter category airplanes are adopted as proposed.

Proposal 29—One commenter states that § 23.807(d)(1)(i), as proposed, should read, "For a total seating capacity of 12 to 15, an . . . ." This commenter contends that SFAR No. 41, as originally written, overlooked the possibility of airplanes with 11 or fewer seats. The FAA does not agree since normal, utility, and acrobatic category airplanes with a seating configuration, excluding pilot seats, of nine or less with exceptions for airplanes with centerline or fuselage-mounted engines, must have an emergency exit on the opposite side from the main door as specified in § 23.783. The FAA considers that the minimum acceptable number of emergency exits for commuter category airplanes are those proposed for a total seating configuration of 15 or less to assure adequate egress in an emergency situation by a substantiating emergency evacuation test.

Another commenter contends that the proposed regulations are insufficient and should conform to § 25.807, to § 25.809(a) and most importantly to § 25.809(b). While these exits must be openable from the inside and the outside, the contention is that common sense and experience dictate that rescue personnel should be able to locate and open these exits from the outside. In addition, this commenter states that the exits should be marked as in § 25.811 and, specifically, must be marked on the outside in accordance with § 25.811(f) and (g). The FAA recognizes some merit in the contentions of this commenter; however, the FAA considers the proposed requirements to be sufficient and points out that § 23.783(c), as adopted, requires each external door to be openable from the outside. The issues raised by this commenter need further study before the FAA issues further regulations. These issues are being considered in the Part 23 Airworthiness Review Program. In addition, the FAA has issued Advisory Circular (AC) 23.807-3, dated January 20, 1984, Subject: "Emergency Exits Openable From Outside for Small Airplanes," on the subject of marking exits openable from the outside, and the Advisory Circular responds to NTSB Safety Recommendation A-82-94. The FAA is not aware of service problems with airplanes recertificated to SFAR No. 41 that would support adoption of the Part 25 requirements.

Proposal 30—One commenter suggests that, for consistency with Part 25, the proposed § 23.809 be presented under § 23.803. Also, to ensure reliable results from the evacuation demonstration, the criteria of § 25.803(c), which is not presented in the proposal, should be incorporated or published as advisory material. The FAA finds merit in the section consistency suggestion and the section is renumbered accordingly. In response to this commenter's suggestion with regard to § 25.803(c), reference should be made to the guidance material of Advisory Circular No. 20-118, "Emergency Evaluation Demonstration From Small Airplanes," dated July 12, 1983. The Advisory Circular sets forth acceptable means, but not the only means, of showing compliance with required emergency evacuation demonstrations from small airplanes. The FAA considers it a satisfactory method of compliance with the regulation as adopted in this final rule.

Proposal 31—One commenter contends that the proposed requirement is not consistent with "real world" problems. The assertion is that present designs do not allow for the safe and reasonable carriage of handicapped persons on board and the 9- to 15-inch minimums for aisle widths, as called for by this NPRM, are not wide enough to accommodate the standard lift chair used to bring nonambulatory persons aboard. At present, handicapped persons usually have to be placed by the cabin door and, in case of an emergency, could block rapid evacuation. This commenter states that a standard width of 21 inches should be the minimum allowed for any airplane which seats more than 10 passengers and notes that narrow aisles also restrict the entrance and exit of passengers, especially if they are older. The FAA appreciates the concern expressed by this commenter for handicapped persons; however, the service experience with current airplanes meeting the minimum standards of aisle width do not support the need for a change as proposed by this commenter. Another commenter states that the Notice proposes to narrow the minimum aisle width by one-fourth of that required for 10- to 19-seat airplanes in Part 25. This commenter contends that minimum aisle width is an important safety feature if evacuation becomes necessary and that Part 25 standards should be retained. The FAA does not agree that for the new commuter category of airplane the minimum aisle width needs to be the same as set forth for the transport category airplane. The minimum aisle width proposed in the Notice No. 83-17 was the same as that used for the recertification of SFAR No. 41 airplanes. The FAA is not aware of any service-related problems with airplanes so recertificated which indicate the minimum width of the aisle is not adequate. Therefore, the minimum width for the main aisle is adopted as proposed.

Proposal 32—One commenter notes that the word "probably" in the second sentence of § 23.831(b) as proposed should read "probable." The FAA agrees and the spelling is corrected.

Another commenter states that the expression "harmful or hazardous concentration of gases and vapors" need to be defined and criteria specified. The FAA does not agree that further definition is needed in the regulations. The maximum concentration of carbon monoxide permissible has been stated in § 23.831(a). The requirement is stated in objective terms to convey the purpose of the rule. In addition, the requirement has been applied in the SFAR No. 41 recertification of airplanes and also in the certification of transport category airplanes without any known adverse experience. The amendment is adopted as proposed.

Proposal 33—No comments were received to the proposal to add a new § 23.851. Accordingly, the requirement is adopted as proposed.

Proposal 34—One commenter contends that the proposal does not succeed in accurately incorporating the interior materials burn test requirements of § 25.853. The most serious is the omission of the 12-second vertical burn test of § 25.853(b) required by its reference to Part 25, Appendix F, paragraph (d). The FAA agrees with the commenter. The requirements, as stated, would require a vertical test with the flame applied for 60 seconds, whereas § 25.853(b) requires an application period of 12 seconds. The time period for application of the flame to materials of § 23.853(d)(3)(ii), therefore, is reduced from 60 seconds to 12 seconds. This commenter notes that in § 23.853(d)(1) the word "towel" should be plural and the word "probably" in the second sentence should read "probable." The FAA agrees and these changes are made in the final rule. This commenter suggests that the phrase "or other equivalent methods" be changed to read "or other approved equivalent methods" in order to conform to the reading of Part 25. The FAA agrees and has incorporated the phrase "or other approved equivalent methods" in § 23.853(d)(3)(ii), as suggested.

One commenter states that the address in § 23.853 (d)(3)(iii) for the American National Standards Institute should be 413 Broadway, New York, New York 20018. In addition, the commenter contends that the motion picture film safety requirements is not needed for commuter category airplanes and should be deleted. Inquiry was made to the American National Standards Institute, and the address stated in Notice No. 83-17 is correct as of this date. The motion picture film safety requirement may not be needed for a particular commuter category airplane design. The requirement is retained, therefore, to assure that the minimum standards are met when motion picture film is used on commuter category airplanes.

Another commenter agrees with the revisions to § 23.853 where major portions of Part 25 were incorporated. This commenter, and two additional commenters, recommend that § 23.853 incorporate the requirements proposed in Notice No. 83-14 (48 FR 46250; October 11, 1983) on the subject of flammability requirements for aircraft seat cushions for commuter category airplanes and make changes to Part 135 similar to the changes made to Part 121 in Notice No. 83-14. The contention is that this improvement is even more critical for the commuter category since, most likely, a flight attendant will not be available to take initial emergency action to extinguish a fire. Furthermore, post crash fires pose a serious problem for commuter airplanes and no logical reason appears as to why new designs should not incorporate this life-saving technological improvement.

The FAA appreciates the concerns expressed by the commenters on the issue of requiring seat cushions in commuter category airplanes to meet the test criteria proposed in Notice No. 83-14. The FAA recognizes the merit of the comments. Further study is required, however, with respect to commuter category airplanes and operations conducted in accordance with Part 135. These issues will be considered in the Part 23 Airworthiness Review.

Proposal 35—One commenter contends that § 23.901(b)(3) appears to be redundant as the installation will have to meet the conditions identified in the installation manual required by § 33.5. The FAA notes that § 33.5 does not specifically address vibration characteristics which are a significant consideration in the installation of turbopropeller engines in commuter category airplanes and the requirement has been applicable to airplanes certificated to the additional airworthiness standards of Part 135, Appendix A, since 1970. Therefore, the requirement is adopted as proposed.

Proposal 36—One commenter contends that § 23.903(e)(2) should be revised to read: "Means must be provided for stopping combustion and rotation of any engine in flight except that engine rotation need not be stopped if continued rotation could not jeopardize the safety of the airplane." This commenter states that this conforms to the Part 25 requirement and provides a needed clarification, and the last part of proposed subparagraph (e)(2) should be deleted because it already appears in subparagraph (d)(2)(iii) of this section. The FAA does not agree that § 23.903(e)(2) should be revised as suggested. First, the proposed requirement of Notice No. 83-17 with respect to stopping combustion and rotation has been required for turbine engines in all Part 23 airplanes since the adoption of Amendment 23-14, effective December 20, 1973, and no reason is offered by the commenter to support the suggested change. Secondly, the last part of proposed § 23.903(e)(2) concerns the requirements for restarting the engine while § 23.903(d)(2)(ii) concerns requirements for stopping the engine. Another commenter contends that the proposal is insufficient and should reflect the provisions of § 25.903, especially paragraph (d)(1). This commenter states that most commuter/turboprop operators have reported one or more rotor failures per year with the resultant disintegrating residue piercing the fuselage at the pilot's or passenger's compartments. Another commenter states essentially the same concern. The FAA concurs, in part, with these comments. Part 23, however, was revised by Amendment 23-29, effective March 26, 1984 (49 FR 6847; February 23, 1984) and adequately addresses the issue of rotor failure in § 23.903(b)(1). One commenter states that the proposed revision to § 23.903(e)(2) is not in accordance with the referenced sources because neither Part 135, Appendix A, paragraph 38(a)(2) nor § 25.903(c) require a means for stopping the rotation of a turbine engine. This commenter contends that such a feature is required only where continued rotation could jeopardize the safety of the airplane and states that the requirement to stop rotation is both restrictive and unnecessary. The commenter suggests that § 25.903(c) replace proposed § 23.903(e)(2). The FAA agrees with the commenter that the requirement for stopping combustion and rotation of the turbine engine is not in the reference sources of Part 135, Appendix A or in § 25.903(c). The requirement is required by the current version of § 23.903(e)(2). The commenter offers no data or information to support a change from the present requirement. Accordingly, the requirements are adopted as proposed.

Another commenter notes that systems within a fire zone that are required to be functional after the outbreak of a fire need to be merely "fire-resistant" and perceives an inconsistency between the "fireproof" and "fire-resistant" definitions of Part 1. This commenter contends that for fire-extinguishing systems to be effective and for continued safe flight, the engine must be stopped and the propeller feathered. That commenter suggests that the requirement should be updated to "fireproof." The FAA does not agree. Part 1 defines "fire resistant," in part, as ". . . the capacity to perform their intended functions under the heat and other conditions likely to occur when there is a fire at the place concerned." Accordingly, the proposal is adopted as stated in Notice No. 83-17.

Proposal 37—No adverse comments were received to the proposal. Accordingly, the requirements are adopted as proposed.

Proposal 38—One commenter contends that the proposed requirement is insufficient and should incorporate all of § 23.963. Additionally, the commenter states that most designs cannot comply with paragraphs (c) and (f) of § 23.963. The FAA does not agree that the requirements are insufficient or that most designs cannot comply with the standards. A review of the provisions of Part 23, together with § 23.963(f), and § 25.963 shows that the wording of § 23.963(a) and (c) are substantially identical to the wording of § 25.963(a) and (c), respectively. Paragraph (c) of § 23.963 and § 25.963 sets forth requirements for flexible fuel tank liners; i.e., § 23.963(c) requires each flexible fuel tank liner be of an acceptable kind while § 25.963(c) requires flexible fuel tank liners be approved or shown to be suitable for the particular application. The FAA considers these requirements substantially equal. Proposed paragraph (f) of § 23.963 is essentially the same as § 25.963(d), except for the differences in downward ultimate inertia forces between those listed in § § 23.561 and 25.561 respectively. The substantive differences between § § 23.963 and 25.963 occur in § 25.963(f) which contains specific requirements for pressurized fuel tanks to prevent the buildup of an excessive pressure between the inside and outside of the tank. The FAA is not aware of any adverse service experience because § 23.963 did not address pressurized fuel tanks in Part 23 airplanes. Moreover, the commenter did not present any information or data to support the contention that the present requirements are insufficient. Accordingly, the requirements are adopted as proposed.

Proposal 39—The FAA received no adverse comments to the requirements as proposed. Accordingly, the revision to § 23.997 is adopted as stated in the Notice No. 83-17.

Comments to Section 23.1143. Section 23.1143, Engine controls. One commenter contends that § 23.1143 should be revised to require a flight-idle gate as required by Part 135, Appendix A, paragraph 51. The FAA does not agree that § 23.1143 needs to be revised as recommended by this commenter and the requirement of § 23.1143(f) was revised by Amendment 23-17, effective February 1, 1977, and provides an equivalency to that of Part 135, Appendix A, paragraph 51, with respect to a flight-idle gate, as stated by this commenter.

Proposal 40—The FAA received no adverse comments to this proposal. Accordingly, the requirement is adopted as proposed.

Proposal 41—The FAA received no adverse comments to this proposal. Accordingly, the requirement is adopted as proposed.

Proposal 42—The FAA received no adverse comments to this proposal. Accordingly, the requirement is adopted as proposed.

Proposal 43—One commenter contends that the proposed requirements for fire-extinguishing systems are inadequate and should meet the standards contained in § 25.1195. This commenter states that passengers to and from the smaller communities deserve the same level of safety in this area as those flying transport category airplanes. Another commenter supports a requirement equal to the standards of § 25.1195 and contends that the General Accounting Office (GAO) study of safety standards on small passenger airplanes lists the need for more stringent fire-protection systems for small airplanes. This commenter states that the GAO report cites numerous fatal accidents caused by fire which started in the engine and spread to the wing. The January 4, 1984, GAO report is identified as "U.S. Government Accounting Office, *Report to Congress: Safety Standards on Small Passenger Aircraft With Nine or Fewer Seats Are Significantly Less Stringent Than On Larger Aircraft.*" A third commenter states that proposed § 23.1195 could cause interpretation difficulties and recommends that for commuter category airplanes, fire zones should be defined and treated in a manner similar to that of Part 25.

The FAA has carefully compared the requirements of §§ 23.1195 and 25.1195. Except for the "each designated fire zone" provision in § 25.1195, the requirements of paragraphs (a) of §§ 23.1195 and 25.1195 were found to be identical. With the exception of designated fire zones, the substantive requirements of paragraphs (b) of §§ 23.1195 and 25.1195 are contained in the first sentence of each subsection and are identical in wording. Section 25.1195(b) states "how compliance must be shown" in the second sentence of the paragraph, and a similar phrase is not contained within the proposed § 23.1195(b). The third sentence of § 25.1195(b) is permissive with respect to the use of individual "one-shot" systems for auxiliary power units, fuel burning heaters, and other combustion equipment. The fourth sentence of § 25.1195(b) requires for each other designated fire zone, two discharges must be provided, each of which produces adequate agent concentration; whereas § 23.1195(b) permits an individual "one-shot" system if all other requirements are met by the fire extinguishing system submitted for approval. The wording and, thus, the requirements of paragraphs (c) of § § 23.1195 and 25.1195 are the same, except § 23.1195 addresses "each compartment"; whereas, § 25.1195 addresses "each zone." The FAA, therefore, does not consider the requirements as proposed in § 23.1195 to be inadequate. Contrary to this commenter's contention, the FAA has determined that the requirements for fire extinguishing systems in commuter category airplanes, with the exceptions noted above, are substantially equal to those required in transport category airplanes. The FAA does not find that the "fire zones" concept for commuter category airplanes is needed.

Proposal 44—No adverse comments were received to the proposal. Accordingly, the requirements are adopted as proposed.

Proposal 45—No adverse comments were received to the proposal. Accordingly, the requirements are adopted as proposed.

Proposal 46—One commenter notes that § 23.1201(b) requires that components in an engine compartment must be "fireproof" and that provision is consistent with the philosophy of having a serviceable fire-extinguishing system for the full period during which a fire is expected to burn. The FAA agrees and the commenter correctly states the reason each system component of a fire-extinguishing system must be fireproof. Accordingly, the requirements are adopted as proposed.

Proposal 47—One commenter notes that § 23.1203(e) only requires a "fire resistant" standard for wiring and other components of the fire detector system and considers it to be inconsistent with other fire protection requirements. This commenter contends that the last event in the successful accomplishment of fire extinguishment of an engine fire is the resetting of the engine fire detector. This is of particular significance on engine installations where the nacelle is not visible from the flight deck. This commenter suggests that the requirement be upgraded to "fireproof" for wiring and other components of the fire detector system. The FAA does not agree with the need to upgrade the "fire-resistant" standard. Part 1 defines "fire resistant" in part, as follows, "With respect to fluid-carrying lines, fluid system parts, wiring, air ducts, fittings, and powerplant control, "fire resistant" means the capacity to perform the intended functions under the heat and other conditions likely to occur when there is a fire at the place concerned." The FAA has determined the requirements, as stated, is appropriate for fire detector systems and a revision of the section is not needed. Accordingly, the requirements are adopted as proposed.

Comment to Subpart F of Part 23. One commenter states that, in general, the FAA proposals for the systems and general designs of SFAR No. 41C brought the general requirements up to an acceptable level. The FAA agrees with this general comment.

Proposal 48—One commenter questions the need for a manifold pressure indicator for engines other than altitude engines; however, since the manifold pressure indicator may give the crew warning of developing engine trouble, the commenter does not oppose the proposal if no objection is received on economic grounds. The FAA received no other comments on this proposal. The requirement has been applied to recertification of SFAR No. 41 airplanes without adverse service experience. Accordingly, the requirement is adopted as proposed.

Proposal 49—One commenter contends that experience has shown that proposed § 23.1309(d) was subject to gross misinterpretation as Part 135, Appendix A, § 59, and its intent should be clarified, i.e., flight safety and not some nonessential function that may have been peripherally involved in certification. This commenter states that the second sentence of § 23.1309(d) should be revised to read:

"Where an installation, the functioning of which is essential to safe flight, requires a power supply, the installation must be considered an essential load on the power supply." The FAA does not agree because where an installation requires a power supply and its function is necessary to show compliance with the applicable requirements, the installation must be considered an essential load on the power supply and, accordingly, the applicable requirements are minimum requirements to type certification.

Another commenter states that although portions of § 25.1309 were incorporated into the proposed § 23.1309, the commenter sees no justification for not incorporating the whole of § 25.1309 into Part 23. The commenter offers no data or reasons in support of the contention that the proposal is not adequate or appropriate except that it does not incorporate the requirements of § 25.1309. In the absence of information to the contrary, the FAA finds the proposed standards appropriate to the commuter category airplane at this time.

One commenter suggests that the expression "safeguard against hazards" should be defined and clarified. Experience with recertification of airplanes to this requirement has not been adverse or controversial. However, § 23.1309 is being reevaluated in the Part 23 Airworthiness Review Program and these concerns will be addressed relative to all small airplanes. Accordingly, § 23.1309(d) is adopted as proposed.

Proposal 50—No adverse comments were received to the proposal. Accordingly, the requirements are adopted as proposed.

Proposal 51—No adverse comments were received to the proposal. Accordingly, the requirements are adopted substantially as proposed.

Proposal 52—One commenter notes that proposed § 23.1351(b)(2), (3), and (4) exclude commuter category airplanes from the present provisions of § 23.1351 concerning excitation of alternators. This commenter contends that these changes are not a part of the requirements of SFAR No. 41 or of Part 135, Appendix A and, therefore, should be removed. The FAA does not agree. Part 135, Appendix A, paragraph 61(b), requires in part, that the generating system must be designed so that the system voltage at the terminals of all essential load can be maintained within the limits for which the equipment is designed during any probable operating condition. The failure of the battery, as permitted by § 23.1351(b)(3), may result in the loss of the alternator and the failure of the battery is considered a probable operating condition. The requirements, therefore, are adopted as proposed.

Another commenter states § 23.1351(b)(5)(ii) supersedes § 23.1307(b)(1) and provides a higher level of system reliability. This commenter contends that a single master switch, as required by § 23.1307(b)(1), will increase the probability of a total generator electrical failure. This commenter recommends revision of § 23.1307(b)(1) to read: "(1) Except for commuter category airplanes, a master switch arrangement . . ."

The FAA does not agree that revision of § 23.1307(b)(1), as suggested by this commenter, is needed. The master switch arrangement requirement, not necessarily a single master switch as contended, assures expeditious disconnection of all electric power sources by a single action of the pilot for all load circuits in an emergency situation. The requirements are adopted as proposed.

Proposal 53—No adverse comments were received to the proposal. Accordingly, the requirements are adopted as proposed.

Proposal 54—One commenter states that to keep the Airplane Flight Manual requirements consistent with transport airplane standards, the relief provided by § 23.1581(b)(2) should not be allowed for commuter category airplanes and further contends that distinguishing approved information from unapproved information is important. This commenter recommends the addition of "Except for commuter category airplanes," before the words, "The requirements of paragraph (b)(1) . . ." in § 23.1581(b)(2). The FAA does not agree with the recommended revision of § 23.1581(b)(2) because the requirements, as stated, are considered clear and understandable regarding approved information and unapproved information in the Airplane Flight Manual.

No adverse comments were received to the proposed new paragraph (e) to § 23.1581. Accordingly, the requirement is adopted as proposed.

Proposal 55—One commenter states that zero fuel weight should be a limitation in accordance with SFAR No. 41, paragraph 4(a). The FAA agrees and the requirements of § 23.25, Weight limits, have been revised accordingly.

Another commenter contends that the operating limitations are insufficient, stating that even if spins are not approved, the commuter category airplanes should be tested for spin recovery, which is not required by this regulation. This commenter further contends that a standard method of spin recovery based on these tests should be in the Airplane Flight Manual. The FAA does not agree that commuter category airplanes should be tested for spin recovery because there is no requirement to test any multiengine airplane, normal category or transport category, for spins and spin recovery. This commenter offers no information or data to support a spin and spin recovery requirement.

One commenter states that the requirements of § 23.1583(c)(3)(ii) concerns ICAO Annex 8 compliance and should be deleted or made optional. The FAA does not agree. The issue of compliance with the requirements of ICAO Annex 8 has been discussed in detail previously in this preamble. Accordingly, the requirement of § 23.1583(c)(3)(ii) is adopted as proposed. This commenter contends that the reference to § 23.57 in proposed § 23.1583(c)(3)(iii) should be deleted. The FAA does not agree. This comment is directly related to establishing the operating limitations for the safe operation of commuter category airplanes and complying with the minimum requirements of ICAO Annex 8. Accordingly, the requirement is adopted as proposed.

Another commenter states that the detailed provisions of proposed § 23.1583(c)(3) depend upon the final form taken by the earlier requirements dealing with establishing takeoff, climb, and landing performance data. This commenter contends that since many of the performance requirements for transport category airplanes have been proposed for commuter category airplanes, any proposal for requirements relating to performance operating limitations should at least follow a review of the existing provisions of § 25.1533 and JAR 25.1533. The proposal to require performance operating limitations relating to continued and abandoned takeoff distances, takeoff and initial en route climb minima, landing distance, and go-around climb gradient minima is supported by this commenter. This commenter offers a text which does not differ fundamentally from proposed § 23.1583(c)(3). Some detailed differences do exist, however, which stem from changes proposed to the requirements relating to establishing performance and an effort to more closely align to the existing provisions of § 25.1533, JAR 25.1533, § § 121.189 and 121.195. A new section, § 23.1533, Additional operating limitations, is suggested by this commenter. The commenter's proposal for § 23.1533 covers all flight phases in the proposed § 23.1583(c)(3) of the Notice plus the takeoff run. The commenter states that the takeoff run constraint is necessary if credit is to be allowed for clearways in showing compliance with the takeoff performance operating limitations. This commenter notes that both the FAA and the commenter's proposals for commuter category airplane performance operating limitations go somewhat beyond the corresponding provisions for transport category airplanes of § 25.1533 and JAR 25.1533, since the proposal in the Notice includes consideration of landing distance. The FAA has carefully considered the comments and suggestions of this commenter. The FAA does not agree that the inclusion in § 23.1583(c)(4)(i) of the weight at which landing distance is determined in showing compliance with § 23.75 goes beyond the provisions in § 25.1533. Section 25.1533(a)(2) includes an equivalent requirement for transport category airplanes. Notice No. 83-17 sets forth requirements which include the intent of the commenter's suggested change. Structuring the airworthiness standards of Part 23 in exactly the same manner as Part 25 or JAR 25 is not needed. Therefore, the requirements are adopted as proposed in the Notice, except that in § 23.1583(c)(4)(i) "landing field length" is changed to "landing distance" to conform with § 23.75 as intended in the reference to § 23.75 in § 23.1583(c)(4)(i).

Proposal 56—One commenter contends that the procedures for a number of maneuvers, unique to the type certification of commuter category airplanes, should be covered in a new subparagraph § 23.1585(c)(5). These procedures are for continued takeoff following engine failure, an abandoned takeoff, an approach and landing with one engine inoperative, and a one-engine-inoperative go-around. This commenter offers a text for each of these procedures. The FAA does not agree that a requirement should be added to § 23.1585, Operating procedures, to specify each type of procedure. The present requirements plus those contained in new paragraph (h) are adequately stated in objective form and encompass the normal and emergency procedures necessary for safe operation of the commuter category airplane. Accordingly, the requirement is adopted as proposed.

Proposal 57—One commenter contends that the FAA proposal appears to be incomplete in that by cross-referencing § 23.1585, the requirement does not exist for the Airplane Flight Manual (AFM) to contain all of the performance data established in accordance with Subpart B—Flight. This commenter offers a revised text as an alternative to § 23.1587(d)(1) as proposed.

The current requirements of Subpart G—Operating Limitations and Information, however, state the overall requirements in an objective manner to assure safe operation of the commuter category airplane. The current requirements, plus those adopted by this amendment, are considered to be appropriate and assure safe operation of commuter category airplanes at this time. In this regard, the references to § 23.1585 in § 23.1587(d)(1) should read § 23.1583 because it relates to the takeoff weight limits in § 23.1583 rather than the operating procedure of § 23.1585. Accordingly, § 23.1587(d)(1) is adopted as proposed with the exception of the substitution of § 23.1583 for § 23.1585.

One commenter contends that the text of § 23.1587(d)(2), (d)(4), and (d)(6), as proposed, related to operating procedures rather than to performance information and is covered by the commenter's proposed revised text of § 23.1585(c)(5). The FAA does not agree that these requirements relate to operating procedures as such, but rather state the parameters of the conditions under which the performance information was obtained. An examination of the performance information requirements for transport category airplanes revealed similar requirements in § 25.1587, Performance information. Accordingly, § 23.1587 is adopted as proposed except as noted in the previous paragraph with regard to § 23.1587(d)(1).

One commenter contends that the extrapolated performance data required by § 23.1587(d)(3) should be available for all airplanes which the maximum takeoff weight exceeds the maximum landing weight and the requirement of § 23.1587(d)(5) should not be limited to just the commuter category airplane. The FAA recognizes the merit of these comments; however, these comments are outside the scope of this rulemaking action.

Proposal 58—One commenter notes that paragraph (b) of Appendix F of Part 23, does not address tests for small parts or wire and cable insulation and should be amended by prefacing paragraph (b) with the words: "Except as provided for materials used in electrical wire and cable insulation and in small parts, ..." In addition, this commenter states that paragraph (b) should be revised to refer to tests under paragraphs (d) and (e) of this Appendix plus instructions for mounting the specimen referred to in paragraph (e). The FAA has determined that the prefacing words suggested are not appropriate to paragraph (b) because if the Administrator finds that these items would contribute significantly to the propagation of a fire, these items must then be tested as stated in § 23.853(d)(3)(v) or by other approved equivalent methods. The FAA agrees with the commenter that paragraph (b) of Appendix F should be revised to refer to the tests under paragraphs (d) and (e), not just paragraph (d) of the Appendix. The FAA also agrees with the commenter that instructions for mounting the specimen referred to in paragraph (e) should be included, and paragraph (b) is revised to include the instructions for mounting the specimen for the horizontal test of paragraph (e). These instructions are substantially the same as those of Appendix F, paragraph (b) of Part 25 which contain an acceptable test specimen configuration for performing the horizontal test.

Another commenter notes that the minimum temperature at the flame center should be 1550°F as stated in paragraph (d). The FAA agrees, and the temperature is changed accordingly.

Proposal 59—No adverse comments were received to this proposal. Accordingly, the requirements are adopted as proposed.

Additional Comments.

One commenter recommends inclusion of a number of additional requirements from the airworthiness standards of Part 25 for type certification of the commuter category airplane, which this commenter considered necessary, as a minimum, in any regulation dealing with scheduled air transportation.

The FAA is of the opinion that the public should be made aware of these comments and the disposition of them by the FAA. The following areas of Part 25 were addressed by this commenter. The commenter states the requirements of § 25.631, Bird strike damage, and § 25.775, Windshields and windows, should be included to assure that the empennage and cockpit windows of commuter category airplanes are capable of absorbing a specified bird strike without incurring flight critical damage to the empennage or the cockpit and/or flight crew. This commenter contends that this category of airplane, because of the planned operating altitudes and stage lengths, will normally be exposed to the possibility of bird strike at a greater rate than most Part 25 airplanes, and because commuter category airplane speed below 10,000 feet will not be much different than the transport category of airplane. Therefore, this commenter states that the commuter category airplane should have the same protection from a bird strike as the transport category airplane. The FAA recognizes the possible merit in the recommendation made by this commenter; however, this addition is considered to be outside the scope of the original proposal. The FAA has included the recommendations in the Part 23 Airworthiness Review program.

This commenter contends that § 23.671, Control systems, General, is too broad and lacks specificity in that it does not address failures of the control system. This commenter states that a definite need exists to address both single and multiple failures of a control system in the manner addressed by § 25.671 and feels confident that most manufacturers are already complying with this requirement; therefore, the requirement should not be a major economic burden. The FAA does not agree that § 23.671 should be revised to read as § 25.671. Part 23 contains other requirements for control systems that provide substantially the same level of safety as does § 25.671. Specifically, the requirements of § 23.677, Trim system, address the failure of a single element in the primary flight control system and require that subsequent to that failure, adequate control should be available for safe flight and landing.

The commenter contends that the requirements of paragraph (b) stated in § 25.1303, Flight and navigation instruments, if made applicable to the commuter category airplane, would give the FAA the authority to require basic flight instruments for both the pilot and copilot and paragraph (c) would require warning devices for the more sophisticated commuter airplanes where compressibility is a factor. The reason given by this commenter for this contention depends on the commenter's interpretation of present Part 23 requirements and may not require flight instruments for both pilot and copilot. The FAA does not agree that the requirements of § 25.1303(b) should be made applicable to the commuter category airplane. The present airworthiness standards provide sufficient flexibility to require flight and navigation instruments at required pilot positions in accordance with § 23.1321 to safely operate the commuter category airplane without adopting the requirements as stated in § 25.1303(b). With regard to the comment addressing warning devices as required by § 25.1303(c), § 23.1303(e) has substantially the same requirement for a speed warning device as § 25.1303(c).

Another commenter stated that present Part 23 requirements permit single source information; e.g., static pressure, to be fed to both the pilot's and copilot's instruments. This commenter contends that reports, especially in pressurized airplanes, have indicated that a leak in one instrument or line has caused all static-sensing instruments on both the pilot's and copilot's panels to become totally useless and damaged. The FAA recognizes the merit of this comment; however, the commenter does not provide any data to support the contention. Additionally, the FAA is not aware of any service difficulty problems with the recertification of airplanes to SFAR No. 41 with single source information. Consequently, the FAA is of the opinion that such a requirement should be reexamined during the Part 23 Airworthiness Review Program.

The comment was received that present Parts 23, 25, 121, and 135 do not address "Floor Proximity Emergency Escape Path Marking." However, Amendments 25-38 and 121-183 (49 FR 43182, October 26, 1984) requiring floor proximity escape path markings for Parts 25 and 121, Rules Docket 23792, address this subject. The commenter recommends that the FAA give serious consideration to incorporating the requirements adopted in Amendments 25-38 and 121-183 into Parts 23 and 135. Further, recommendations were made that the FAA should consider the requirements of emergency provisions in Part 25 for the commuter category airplane and extend the requirements of § 135.177, Emergency equipment requirements for aircraft having a passenger seating configuration of more than 19 passengers, to include the commuter category airplane. If the requirements of § 135.177 were extended to the commuter category airplane, then the requirements of § 121.310 would be included automatically in accordance with § 135.177(a)(4). The FAA has considered carefully the comments made, reviewed the requirements of § § 135.177 and 121.310, and has concluded that these requirements are overly stringent, considering the distance between the seats and the nearest emergency exit, for the size of the airplane to be type certificated in the commuter category.

This commenter contends that Part 135, Subpart I-Airplane Performance Operating Limitations, authorizes takeoffs at weights that would not allow an airplane to clear all obstacles if an engine should fail after V_1 and recommends that § § 121.177 and 121.189 — Takeoff limitations, should be required for commuter category airplanes operated in accordance with Part 135. The FAA does not agree with this commenter's contention that should an engine fail after V_1, the commuter category airplane would not be able to clear all obstacles. The Airplane Flight Manual contains operating limitations related to one-engine-inoperative takeoff and climb requirements and obstacle clearance requirements when operated pursuant to Part 135, and § 135.399 prohibits operations beyond these operating limitations. The FAA also considers the takeoff limitations for Part 135 operations with commuter category airplanes substantially equivalent to those requirements stated in § § 121.177 and 121.189.

This commenter states that the FAA should not authorize Designated Engineering Representatives (DER) or Delegation Option Authorization (DOA) approval of ice protection systems.

The contention is that the FAA should be personally involved in both the system approval and flight test program, and this commenter states that their experience has shown that some of those airplanes certificated through the designee program had serious problems with their ice protection systems. The FAA does not agree that designees should be prohibited from the approval of ice protection systems. The involvement of the FAA in approval of ice protection systems by designees is determined on a case-by-case basis. The FAA sees no reason to change this procedure.

This commenter summarizes by stating a belief that the traveling public would be served better if Part 23 remained as presently written and all airplanes configured for 10 or more passengers were classified in the large transport category and certificated to Part 25 as required by Amendment 23-10 (36 FR 2863, February 11, 1971). The commenter contends that if a particular applicant needed relief from a specific portion of Part 25, the applicant could apply for and gain relief for justified requests. The FAA thoroughly examined the options available to establish airworthiness standards for an airplane of the size proposed for the commuter category and Notice No. 83-17 was the appropriate course to follow. Subsequent events to Amendment 23-10 in addition to the withdrawal of proposed Part 24—Light Transport Airworthiness Review Program support the need for airworthiness standards for the commuter category airplane by size, weight, and expected operational use. The comments support the decision to amend Part 23, as stated in Notice No. 83-17.

As discussed in the preamble to this amendment, the scope and objective of this rulemaking action are to integrate into Part 23, the airworthiness standards considered necessary for the commuter category airplane. The intent is not to propose substantive changes to Part 23 or to the airworthiness standards being integrated into Part 23, except as discussed in the Notice. The FAA is concerned about bird strike damage to windshields, as suggested by this commenter, and is of the opinion that further study is necessary before rulemaking action is taken on this additional suggestion for commuter category airplanes.

Section 21.17, Designation of applicable regulations. One commenter notes § 21.17(b) specifies the life of a type certificate application as 5 years for the transport category and 3 years for other categories. Current evidence indicates, according to this commenter, that 3 years is not sufficient for the approval of present Part 23 airplanes; accordingly, 3 years is contended to be inadequate for the commuter category. This commenter recommends that § 21.17(b) be changed to allow 5 years for all type certificate applications. The commenter submits no data or evidence that the current 3-year time limit for a type certificate application is inadequate. Therefore, the section is not amended under this rulemaking action.

Proposals 60 through 72—These proposals were to amend Part 21 to permit the type certification of commuter category airplanes in the same manner as other airplanes. No adverse comments were received to these proposals. Accordingly, the proposals are adopted as stated in the Notice. However, a discussion on the issuance of airworthiness certificates for normal and commuter category airplanes under the provisions of § 21.183 has been included in the discussion of proposal number 3.

Proposals 73 through 78—Two commenters address the issue of the proposed extension of Part 36, Appendix F, standards to the new commuter category airplane. One commenter suggests an applicant be permitted to show compliance with Part 36 by complying with either Appendix F, which contains the standards for propeller-driven small airplanes, or with Appendix C, which contains the standards for transport category large airplanes. The FAA does not concur with this suggestion for two reasons. First, data collected both by the United States and by the International Civil Aviation Organization (ICAO) shows that turbine-powered, propeller-driven airplanes below the 19,000 pound limit would have little difficulty meeting the Appendix F limit. Second, the Appendix C standard was developed primarily for larger airplanes including the large commercial turbojet-powered airplanes. Accordingly, Appendix C involves more precision testing and data correction. Since the Appendix C tests are considerably more expensive to the applicant, the FAA considers the suggestion to be impractical and not in the public interest.

Several comments on the noise issue were received as these issues relate to consistency of the proposed commuter category standards with both existing and future ICAO noise standards for propeller-driven airplanes. As the commenters point out, the United States and ICAO have different rulemaking cycles and, as a consequence, an inconsistency between the two standards will result when the proposals of Notice No. 83-17 are adopted. The United States and members of ICAO currently are developing an improved noise standard for small propeller-driven airplanes. When this cooperative effort is completed, the FAA will consider amending Part 36 to require compliance with these improved standards for appropriate categories of airplanes, including the commuter category.

Accordingly, the proposals to amend Part 36 are adopted as stated in the Notice.

Proposal 79—Notice No. 83-17 proposed to amend § 91.213, Second-in-command requirements, to allow operation of a commuter category airplane without a pilot who is designated as a second in command (SIC) if that airplane is type certificated for operations with one pilot.

Section 91.213 was first adopted on July 17, 1972 (37 FR 14758; July 25, 1972), in response to the safety concerns of the flying public. The majority of the public comments favored the SIC requirements of that section. The only exception to the two-pilot requirement of § 91.213 is a provision for existing SFAR 41 airplanes. The exception was adopted (47 FR 30946; July 15, 1982) to relieve Part 91 operators of SFAR 41 airplanes of a perceived economic burden. Notice No. 83-17 proposed to allow operation of certain commuter category airplanes without an SIC in essentially the same manner as an SFAR 41 airplane.

The FAA received 28 comments in response to the NPRM. Only one commenter specifically addresses the SIC requirements. That commenter opposes the adoption of the § 91.213 proposal. Another commenter later submitted a comment opposing those comments.

The Federal Aviation Act of 1958 charges the FAA with the duty of promoting safety of flight of civil aircraft and empowers the FAA to prescribe minimum standards as may be required in the interest of safety. In prescribing these standards, the FAA must make classifications of such standards, as appropriate, to maintain an equivalent level of safety for operations with varying levels of complexity and varying degrees of risk to the public. It necessarily follows that the more complex the operation and the greater the public exposure to risk, the higher the standards that are required.

In this connection, the FAA has had some safety concerns regarding the single-pilot operation of airplanes certificated for operation with up to 19 passengers as proposed in the NPRM. By its very nature, operation of an aircraft with a single pilot cannot provide a level of safety equivalent to operation by a crew of two or more.

There must be some point at which it is reasonable to require two pilots for all operations under Part 91. The current 12,500-pound weight demarcation between small and large airplanes was established more than 40 years ago and was based upon prevailing and anticipated future aircraft design considerations. Whether the demarcation of 12,500 pounds is arbitrary is not an issue in this rulemaking action. However, some line of demarcation must be drawn that will act as a buffer between the competing forces of safety and economics.

The FAA has determined, however, that this rulemaking action should not be delayed, nor is it within the scope of this action, to address all flightcrew requirements for future operations under Part 91. To do so would place an undue economic hardship on aircraft manufacturers who have ongoing airplane certification programs. Nevertheless, the FAA must establish, in the interest of safety, a line of demarcation in this final rule for those commuter category airplanes that need two pilots for all operations regardless of weight or type of operations. Other issues involving flightcrew requirements for Part 91 operations will be handled by a separate rulemaking action.

Based upon a careful review of additional safety data and comments received during the regulatory process, the FAA will amend § 91.213(a)(1) to require two pilots for all operations of commuter category airplanes except commuter category airplanes that (a) have a passenger seating configuration, excluding pilot seats, of nine seats or less and (b) are type certificated for operations with one pilot. This line of demarcation will be consistent with that of Part 23 for certification of small airplanes and Part 135, which governs the operations of air taxi and commercial operators.

Based upon the comments to the NPRM and the safety concerns discussed herein, the FAA is requesting further comments on the 9 seats or less demarcation for single-pilot operations under § 91.213(a)(3). The FAA will review all additional comments submitted. If those comments and further study by the FAA indicate a need to make further regulatory changes, the FAA will initiate the appropriate action prior to the effective date of these amendments. Comments submitted to Docket No. 23516 within 45 days after the publication of this rule in the *Federal Register* will be considered.

Proposal 80—One commenter does not agree with the FAA's decision to classify commuter category airplanes as small airplanes. This commenter contends that numerous safety related items, such as pilot type rating, second-in-command requirements, and flight instruments for the second in command would be required if the airplanes were considered large instead of small. This commenter states that § § 61.58, 91.4, and all of Subpart D of Part 91 would automatically be applicable when the airplane is being operated in accordance with operating rules other than Part 135. In addition, this commenter states that these same airplanes should have to comply with § 135.175 which relates to airborne weather radar in lieu of § 135.173, Airborne thunderstorm detection equipment.

In response to the commenter's position on classifying the commuter category airplane as a small airplane, the FAA has reexamined proposed § 135.4 and has determined that designation of all sizes of commuter category airplanes as small is not appropriate for Part 135. Accordingly, proposed § 135.4 to identify a commuter category airplane as a small airplane for the purposes of Part 135 is not adopted. Commuter category airplanes have been included in § § 135.169 and other sections of Part 135 as discussed in proposals 81 and 82 below.

The FAA agrees with the commenter that the airborne weather radar requirements of § 135.175 should apply to commuter category airplanes. While this requirement was not specifically proposed in Notice No. 83-17, the FAA will consider whether such an equipment requirement can appropriately be imposed based on the provisions of § 135.149(e).

Proposal 81—No adverse comments were received directly addressing this proposal. However, due to the nonadoption of § 135.4 as discussed above, § 135.169 has been revised by changing the wording of § 135.169(a) to permit the operation of a large commuter category airplane under Part 135 and exempt that category airplane from the cited requirements of Part 121. In some cases, these cited requirements of Part 121 would require the airplane design to include provisions that would be beyond the scope of Notice 83-17. As previously discussed, the FAA is considering additional cabin safety and occupant protection requirements for commuter category airplanes. The additional requirements of Part 121 will be considered as a part of that rulemaking project. To permit the operation of small commuter category airplanes under Part 135, § 135.169(b) is adopted as proposed. Because no commuter category airplane could have been operating under Part 135 prior to August 19, 1977, the proposed § 135.169(c)(2)(iii) is not adopted.

Proposal 82—Following the above identified changes to § 135.169, it was also necessary to review the proposal for § 135.399. As proposed, this section contained performance operating limitations for small nontransport category airplanes and commuter category airplanes, with the possibility of confusion occurring. To clearly identify the performance operating limitations for each of these two categories of airplanes, the proposal for § 135.399 has been revised by providing a new § 135.398 Commuter category airplane performance operating limitations, which includes only those requirements proposed for commuter category airplanes. Performance operating limitations for small nontransport category airplanes remains unchanged in § 135.399. In addition, § 135.363 has been revised by adding a new paragraph (j) to require operators of commuter category airplanes to comply with § 135.398.

One commenter agrees with a requirement for consideration of the required takeoff flight path data. However, the proposal is keyed to ICAO Annex 8 and the commenter contends that the word "net" should be deleted from the proposed § 135.399(b). The FAA does not agree since the net takeoff flight path data is required to provide the necessary level of safety for operation of the commuter category airplane under the provisions of Parts 91 and 135. New § 135.398(b) is adopted as proposed for § 135.399(b).

Another commenter states that if the intended level of safety is to be achieved, a clear statement is needed regarding the performance operating rules which are applicable to commuter category airplanes. This commenter contends that this need is not met by § 135.399, either in its existing form or proposed form. The commenter states that since the scheduled performance data for commuter category airplanes is very similar to that of transport category airplanes, any proposed performance operating rules for commuter category airplanes modeled on existing provisions for transport category airplanes in Part 121 would seem reasonable. A proposed text is offered detailing performance operating rules for inclusion in Part 135. The FAA does not agree. The existing requirements, and the amendments adopted by this action, provide for an appropriate level of safety for operations under the provisions of Part 135 for commuter category airplanes and more detailed requirements are considered unnecessary at this time.

Economic Impact

A regulatory evaluation has been conducted and a copy is available in the docket. A copy may be obtained by contacting the person identified under FOR FURTHER INFORMATION CONTACT.

This final rule provides for the certification and operation of a new category airplane, the commuter category. To accomplish this end, there are approximately 82 specific changes to the FAR. With four exceptions, all changes are similar in substance to requirements previously applied to propeller-driven airplanes of a size approximating that of the commuter category. The four exceptions require: (1) compliance with ICAO Annex 8, Part III, (2) consideration of obstacle clearance for takeoffs in Part 135 operations, (3) commuter category airplanes with more than 9 passenger seats to be operated in Part 91 operations with a second pilot, and (4) commuter category airplanes to be defined as large and small for Part 135 operations.

There are no additional costs associated with these amendments, since they do not amend the requirements applicable to any existing airplane category, but rather, provide an option for manufacturers to certificate propeller-driven airplanes of this size to requirements other than those applicable to transport category airplanes.

The provisions proposed in the previously withdrawn draft of Part 24 for light transport category airplanes, and the detailed airworthiness standards of Part 25, have not been applied to certification of new airplane designs of the commuter category size because the costs of compliance exceeded the benefits from future sales, purchase, and operation.

The benefits of having a commuter category certification standard in Part 23 are not readily quantifiable. However, based upon a study conducted when the FAA was considering a new Part 24, the cost of certificating a hypothetical 30-seat airplane under Part 25 would have cost $8,000,000 more than certificating under SFAR No. 41, Appendix A of Part 135. The unit cost of production of the airplane certificated to the airworthiness standards of Part 25 would have been approximately $200,000 higher. Clearly certification under Part 25 would be considerably more expensive than under the requirements of Part 23 as amended by this final rule. A copy of the study is filed in Docket No. 18600 for examination by interested persons.

Regulatory Flexibility Determination

The FAA has also determined that the rule changes will not have a significant economic impact on a substantial number of small entities. The FAA's criteria for a small airplane manufacturer is one employing less than 75 employees, and a substantial number is a number which is not less than 11 and which is more than one-third of the small entities subject to the proposed rules, and a significant impact is one having an annual cost of more than $14,258 per manufacturer.

A review of domestic general aviation manufacturing companies indicates that only six companies meet the size threshold of 75 employees or less. The amendments will therefore not affect a substantial number of small entities.

Trade Impact

The amendments to the FAR will improve trade opportunities for both U.S. firms doing business overseas and foreign firms doing business in the United States. In addition, the amendments have the beneficial impact of allowing a wider range of airplanes to be certified under Part 23.

Conclusion

For the reasons discussed earlier in the preamble, the FAA has determined that this document (1) involves regulations which are not considered to be major under the procedures and criteria prescribed by Executive Order 12291, and (2) is not significant under Department of Transportation Regulatory Policies and Procedures (44 FR 11034; February 26, 1979). I certify that under the criteria of the Regulatory Flexibility Act, these final rules will not have a significant economic impact on a substantial number of small entities. In addition, these final rules will have little or no impact on trade opportunities for U.S. firms doing business overseas or for foreign firms doing business in the United States.

Adoption of the Amendments

Accordingly, Parts 21, 23, 36, 91, and 135 of the Federal Aviation Regulations (14 CFR Parts 21, 23, 36, 91, and 135) are amended effective February 17, 1987.

The authority citation for Part 135 continues to read as follows:

Authority: 49 U.S.C. 1354(a), 1355(a), 1421 through 1431, and 1502; 49 U.S.C. 106(g) (Revised Pub. L. 97-449, January 12, 1983).

Amendment 135-22

Air Traffic Control Radar Beacon System and Mode S Transponder Requirements in the National Airspace System

Adopted: January 29, 1987 **Effective: April 6, 1987**

(Published in 52 FR 3380, February 3, 1987)

SUMMARY: This action establishes requirements pertaining to the use, installation, inspection, and testing of Air Traffic Control Radar Beacon System (ATCRBS) and Mode S transponders in U.S.-registered civil aircraft. The rule adopted continues to require a transponder for operation in each terminal control area (TCA) and in the airspace of the 48 contiguous states and the District of Columbia above 12,500 feet above ground level (AGL). Automatic pressure altitude reporting equipment, which is currently required in all of the above airspace except Group II TCA's, will be required in Group II TCA's effective December 1, 1987. The rule provides for a phased transition from ATCRBS to Mode S transponders in the National Airspace System (NAS) by limiting the manufacture and installation of ATCRBS transponders. After January 1, 1992, all newly installed transponders in U.S.-registered civil aircraft are required to meet the requirements of the technical standard order (TSO) for airborne Mode S transponder equipment.

The rule also permits ATCRBS transponders already installed on that date to be used indefinitely. Projected increases in air traffic will require improved aircraft location and identification information, which will be provided by the Mode S and automatic pressure altitude reporting equipment. These requirements are an essential component of the NAS Plan. Mode S is also a necessary technical prerequisite to obtain data link services which allow digital exchange of information between aircraft and the ground. The FAA will provide these services beginning on/about 1990. This action also sets forth test and inspection requirements for the Mode S transponder and a new output power test requirement for the ATCRBS transponder.

EFFECTIVE DATE: April 6, 1987

FOR FURTHER INFORMATION CONTACT: Mr. Gene Falsetti, Airspace and Air Traffic Rules Branch, Airspace—Rules and Aeronautical Information Division, Air Traffic Operations Service, Federal Aviation Administration, 800 Independence Avenue, S.W., Washington, D.C. 20591; telephone: (202) 267-9249.

SUPPLEMENTARY INFORMATION:

The three kinds of aircraft equipment addressed by this rulemaking are as follows:

Air Traffic Control Radar Beacon System, (ATCRBS). A radar system in which the aircraft to be detected is equipped with a radio receiver/transmitter called a transponder. Radar pulses transmitted from the ground are received by the transponder and used to trigger a distinctive transmission from the transponder. The controller's radar receives this transmission and displays a distinct and amplified return on the radar scope.

Mode S Transponder. The Mode S Transponder is an advanced version of the existing ATCRBS transponder. The Mode S transponder is completely interoperative and compatible with the current ATCRBS system. Mode S utilizes a discrete set of radio pulses (code) for each individual aircraft, and is not limited to the maximum 4,096 possible codes of the ATCRBS transponder. Mode S also adds the capability to provide a data link between the aircraft and the ground.

Mode C (Automatic Altitude Reporting Equipment). Some transponders are equipped with a Mode C capability. Mode C is that function of a transponder which responds to specific ground interrogations by transmitting the aircraft's current altitude in 100 foot increments. This information is received by ground equipment and displayed on the controller's scope in the data block for the transmitting aircraft. Mode C may be used with both ATCRBS and Mode S transponders.

History

On October 18, 1983, the FAA published an Advance Notice of Proposed Rulemaking (ANPRM) announcing the proposed use of Mode S transponders in the NAS (48 FR 48364, Notice No. 83-16). The following was proposed to take effect by 1992 or earlier, as noted:

1. Issuance of a technical standard order (TSO) for airborne Mode S transponder equipment. With issuance, TSO authorization to manufacture ATCRBS transponders would be terminated effective in 1986.

2. Amendment of Federal Aviation Regulations (FAR) Part 43 to include tests and testing procedures appropriate to Mode S transponders.

3. Amendment of FAR Part 91 as follows:

a. Newly installed transponders in U.S.-registered civil aircraft would meet requirements of the new TSO for airborne Mode S transponder equipment.

b. Either a Mode S or ATCRBS transponder, as well as automatic pressure altitude reporting equipment, would be necessary to operate in TCA's.

c. Either an operable Mode S or ATCRBS transponder, as well as automatic pressure altitude reporting equipment, would be necessary above 12,500 feet MSL in U.S. airspace. The proposal would retain the current exception for gliders above 12,500 feet MSL and retain provisions for helicopters and air traffic control (ATC) authorized deviations.

d. Automatic pressure altitude reporting equipment would be required for operations in Group II TCA's.

4. Amendments to FAR Sections 121.345(c), 127.123(b), and 135.143(c) to be consistent with the amendments to Part 91.

Comments—Proposed Introduction of Mode S

Comments were generally favorable to the proposed introduction of Mode S in the NAS. Twelve (12) comments were received which, though generally supportive, expressed some concern in several areas.

The areas of concern centered on:

1. The ramifications to U.S. manufacturers, foreign governments, and various international users regarding early cutoff of the TSO authorization to manufacture ATCRBS transponders in 1986.

2. The need for improved accuracy of altitude data, improved automatic pressure altitude reporting equipment, and reduced quantization (i.e., smaller intervals of reported altitudes) of aircraft reported altitude in the Mode S environment.

3. The impact of the proposed installation requirement on the Department of Defense (DOD) and on general aviation aircraft owners and operators.

4. The impacts on pilot cockpit workload, awareness of other air traffic, and the vulnerability to errors in altitude reporting in an automated system.

5. The extent of U.S. airspace within which Mode S would be required.

6. The bottom-line services and benefits that Mode S offers users, particularly general aviation users, in the NAS.

On September 17, 1985, the FAA published a Notice of Proposed Rulemaking (NPRM) (50 FR 37674, Notice 85-16) which reflected consideration of the concerns expressed in response to the ANPRM.

1. The NPRM acknowledged that an early U.S. withdrawal of the ATCRBS TSO authorization would likely have an unnecessarily disruptive and adverse economic effect on U.S. manufacturers' international sales of the ATCRBS and in addition an adverse effect on the regulatory and certification processes of foreign countries. To meet the dual objectives of permitting the continued manufacture and sale of ATCRBS transponders for foreign distribution and consumption while accomplishing an orderly domestic phase-in of Mode S transponders, the FAA proposed a schedule of installation requirements applicable only to ATC transponder equipment installed in U.S.-registered civil aircraft. The schedule was as follows:

Mode C automatic pressure altitude reporting equipment would be required in Group II TCA's effective January 1, 1992.

Transponder equipment, except equipment reinstalled in an aircraft from which it was removed for maintenance, would be required to meet TSO performance and environmental requirements in accordance with the following schedule:

1. Through December 31, 1986:

Any class of ATCRBS transponder (TSO-C74b or TSO-C74c), as appropriate; or any class of TSO-C112 (Mode S).

2. January 1, 1987, through January 1, 1992:

Any class of ATCRBS transponder (TSO-C74b or TSO-C74c) if the equipment was manufactured before January 1, 1987; or any class of TSO-C112 (Mode S).

3. After January 1, 1992:

Any class of TSO-C112 (Mode S).

As stated in the NPRM, the revised schedule was seen as providing several options to the U.S. civil aircraft operator. For example, the operator could use a previously installed ATCRBS transponder as long as it could be maintained. Through December 31, 1986, the operator could elect to replace a previously installed transponder or install a newly manufactured or used ATCRBS or a Mode S transponder meeting appropriate TSO specifications. From January 1, 1987, through January 1, 1992, the operator could elect the same options with one restriction. If the operator elects to install a new or different ATCRBS transponder, it must have been manufactured prior to January 1, 1987.

2. With respect to the concerns relative to improved accuracy of altitude data, improved automatic pressure altitude reporting equipment, and reduced quantization of aircraft reported altitude, the FAA agreed there would be benefits from greater precision in automatic altitude reporting. However, the agency maintained that each area would require separate development of the associated technology and procedures; and in each case, the FAA would seek public and industry input on the specific proposal. In addition, the existing equipment and procedures were determined to be fully adequate to support the additional reporting requirements proposed in the NPRM. For the above reasons, and because the suggested improvements were beyond the scope of the NPRM, the FAA determined it would not be appropriate to incorporate such suggestions in the Mode S NPRM. The agency did announce it would consider the institution of separate rulemaking for adoption of the requested improvements.

3. It was also recognized in the NPRM that an early cutoff of the ATCRBS TSO would adversely affect DOD equipage plans for its sizeable fleet. Accordingly, the FAA stated in the preamble to the NPRM that it proposed to permit continued manufacture of ATCRBS transponders to correspond to the DOD Mark XV implementation schedule.

4. The preamble to the NPRM also recognized the concern expressed concerning the adverse effect a "silent" Mode S data link environment would have on overall pilot traffic awareness and pilot workload in the cockpit. Again, these concerns were considered to be well beyond the scope of the NPRM. The FAA stated in the NPRM that in its implementation of data link, the agency would involve the public in its studies of all factors associated with each kind of message being considered for data link.

5. The concerns relative to the impact of Mode S on general aviation were articulated by the Aircraft Owners and Pilots Association (AOPA). AOPA's position was that the benefits of Mode S would accomplish acceptance of Mode S on a voluntary basis and that it should not be mandated. AOPA also questioned the benefits of Mode S to low altitude traffic. AOPA went on record as opposing Mode S if it were mandated above 6,000 feet. AOPA did recognize that the FAA proposal was to mandate Mode S or ATCRBS above 12,500 feet and within TCA's.

FAA responded to the issues of bottom-line benefits, scope of airspace wherein Mode S is proposed, and service capabilities with a summary of the benefits of the NAS Plan. The goals of the NAS plan were broadly presented in the preamble of the NPRM as those designed to meet the pressures of increased demands for aviation services, limit costs, and provide and improve facilities. The preamble further stated that the plan for Mode S is incorporated in the NAS Plan because Mode S is considered to provide the airborne data link capability in NAS. The following excerpts from the NPRM describe in summary the NAS Plan and the role of Mode S in the NAS.

The NAS Plan is a comprehensive plan supported by large increases in automation to yield significant improvements in service and cost savings to the airspace user, the taxpayer, and the ATC system. Cost savings are expected through reductions in delays and fuel consumption due to improved traffic handling capabilities and the increased ability of the ATC system to accommodate direct, pilot-preferred routings. The effectiveness of NAS is expected to be dependent, in great part, upon a surveillance system which can provide accurate position information, relatively interference-free aircraft identity through selective addressing, and automatic pressure altitude reporting equipment. The Mode S transponder, coupled with its associated automatic pressure altitude reporting equipment, is considered a key piece of avionics necessary to participate fully in and receive the benefits of the NAS.

To summarize the role of Mode S in the NAS, Mode S is an advanced secondary radar system expected to provide improved accuracies in the surveillance of aircraft position and more interference-free identity and altitude reports to ATC.

Comments on the NPRM

The NPRM comment period expired December 16, 1985. At the request of the Air Transport Association (ATA), the comment period was reopened. The reopened period extended from February 14 to

March 3, 1986 (51 FR 5686, Notice 85-16). A total of 15 commenters responded during both the original and reopened comment periods. There was general support and acceptance of the proposal. However, those in support of the proposal did express certain reservations and suggestions for improvement. Those in general support of the proposal but with comment and suggestions were the Air Traffic Control Association (ATCA), Air Line Pilots Association (ALPA), Soaring Society of America (SSA), Experimental Aircraft Association (EAA), General Aviation Manufacturers Association (GAMA), Air Transport Association (ATA), the State of Montana, the Aerospace Industries Association of America (AIAA), Rockwell International, and Allied Bendix Aerospace. Those generally opposed to the proposed introduction of Mode S into the NAS were the Aircraft Owners and Pilots Association (AOPA), the National Business Aircraft Association (NBAA), Foster Airdata, and two private citizens.

Issues

A common element in the comments was a perception that the agency is proceeding too quickly in mandating Mode S. Many commenters stated or implied that the FAA is accelerating the Mode S transponder requirement without giving due regard to the need for allowing a reasonable acceptance period on the part of all parties affected. Those identified as being affected by an accelerated transition from ATCRBS to Mode S equipment included the manufacturers who must design, develop, produce, and market Mode S; aircraft manufacturers who design and manufacture their aircraft cockpits to accommodate installation of Mode S; installers; and general aviation owners and operators who will make the ultimate decisions to purchase and install it.

The following are the major issues and related subissues presented in the public comments.

Major Issues—

a. Mode S is costly.

b. The proposed installation schedule for Mode S transponders creates problems for:

—Avionics manufacturers

—Aircraft manufacturers

—Airlines

—Owners and operators who believe they may be forced into making two purchase decisions, an initial one for a surveillance transponder, and a subsequent purchase when added data link services become available. In addition, commenters representing general aviation believe the general aviation operators may be forced into purchasing a transponder whose benefits are questionable.

c. Data link services to be available are indefinite. FAA has made no commitment to data link, causing uncertainty as to when and what services will be available.

Other issues—

There were a number of other issues and subissues raised. They are as follows:

1. There is no justification for automatic pressure altitude reporting equipment in Group II terminal control areas (TCA). On the other hand, other commenters expressed the opposite view. That view was that there is a recognizable need for automatic pressure altitude reporting equipment and its use should be required by separate rulemaking.

2. The recent decline in aviation growth does not bear out original NAS plan estimates and it makes the mandating of Mode S transponders unnecessary.

3. There are deficiencies and problems with the proposed transponder tests.

4. There are performance weaknesses and deficiencies associated with Mode S, data link, and Mode C altitude reporting equipment.

5. Use of Mode S with data link would create a "silent" environment, as opposed to today's "party line" voice communications environment. A silent environment is hazardous to flight safety.

6. The Mode S requirements may adversely affect DOD fighting capability.

7. The U.S. may be breaking International Civil Aviation Organization (ICAO) agreements if it issues a rule without international approval.

8. Issuance of Mode S requirements prior to issuance of the Mode S TSO is premature.

Discussion of major issues.

a. Major issue number 1: Mode S is costly. Generally, concerns were expressed that Mode S transponders could impose a financial burden on the industry and that the FAA seems little concerned that added costs will have the greatest effect on the general aviation fleet. Major concerns associated with cost were—

(1) Mode S transponder prices, even before data link is added, will be higher, creating a smaller market, which in turn will drive the cost even higher.

The effect of higher prices would be to freeze or reduce the transponder equipage levels at the lower end of the fleet.

(2) Mode S transponders with data link will cost more because they are significantly more complicated and complex.

One commenter said that FAA's finding in its economic evaluation that the difference in cost between the ATCRBS and a basic Mode S transponder would be approximately $600 after a break-in period, was fallacious. This was said to be so because if real-time weather and automated ATC data link communications are the Mode S benefits, a surveillance-only transponder would not be very marketable. In other words, to take full advantage of data link and automation benefits, the Mode S transponder will be considerably more complicated, and therefore more costly, than a surveillance-only transponder.

(3) There may be a need to make more than one buy of a Mode S transponder.

One commenter said that without any real FAA definition of what if any data link services might be available, an operator might at first buy a basic Mode S transponder and subsequently be faced with a decision to buy another more expensive model when and if operationally effective data link services become available. On this issue, the ATA suggested that data link, at least at the basic communications level, should be required by regulatory schedule. This would permit introduction of data link for ATC purposes, without requiring replacement of the basic transponder. It would also permit reasonable investment decisions for equipment to be installed at earlier dates.

(4) Mode S transponders will have a negative cost impact on small helicopters and airplanes, and on the DOD fleet.

This commenter said the DOD would feel a great impact because of its large new fleet which would be introduced during transition to Mode S. The U.S. Army alone has nearly 10,000 helicopters now, most of which are being replaced by new helicopters which could be required to carry advanced navigational capabilities of ATCRBS and Mode S equipment. The commenter concluded that the proposed requirement seemed to be excessively redundant and expensive.

Discussion of cost issue.

Under the narrow-demand, higher-price, and resultant equipage-freeze theory, the industry would produce fewer transponder options if there is a narrow base of demand, focusing on the higher end of the market (with built-in data link). FAA discussions with marketing representatives of two manufacturers of transponder equipment did not support this scenario. Both companies advised they expect to continue to produce mainly for a major portion of the market. They do not expect any significant contraction in the demand for their transponders in the 1990's in large part because of the expected existence of a substantial retrofit market. With regard to the market as a whole, although there has been a dramatic decline in the production of general aviation aircraft in recent years, the size of the total fleet and the number of hours flown have remained fairly constant or increased somewhat. Furthermore, the manufacturers have the freedom to produce basic Mode S equipment that will be upgradable or have data link capability, thereby enhancing its attractiveness to potential purchasers of smaller aircraft.

Some commenters noted that the price difference quoted in the rule between Mode S and ATCRBS transponders does not include data link and that there are very few or no advantages for a Mode S transponder without data link. The manufacturers' ability to produce basic, upgradable equipment, as expressed above, is expected to help resolve this problem.

With respect to the issue of basic Mode S advantages/disadvantages, the FAA recognizes that data link is a major benefit of equipping with a Mode S transponder. The agency also believes that most users will eventually opt to equip with data link. There are however, two basic advantages of Mode S transponders that accrue to users that derive from the capability to enhance ATC services. One is the unique address portion of the Mode S transponder which makes possible the automatic association and display of the transponder reply with aircraft registration on the ATC radar scope. The other is that when a Mode S transponder operates with a Mode S ground system, certain kinds of radio interference present in high-density traffic environments are reduced below the level experienced with an ATCRBS transponder. Not all of the garbling problems with the ATCRBS transponders and ATCRBS ground station can be eliminated by upgrading the ground station or the transponder.

There is also more to the cost issue when considered in conjunction with Mode S with data link capability. The FAA had considered a requirement that would have included some level of data link with every Mode S transponder, but rejected it for two reasons. First, the agency believes that most users desire that the device mandated by the rule be as simple as possible—a number of commenters obviously preferred a device even simpler than Mode S. Second, FAA believes that a rule mandating data link would unnecessarily limit the flexibility of manufacturers to develop a range of capabilities. That range might be described as follows. At bottom is the user who is aware of the benefit of improved ATC surveillance, but has no use for the kinds of information envisioned for data link. A middle range may be the visual flight rules (VFR) operator with a simple display device to obtain weather services through data link. At the top of the line, one might find a frequent instrument flight rules (IFR) operator needing display, a touch entry device, or even a printer to make a permanent record of data link messages to obtain weather and ATC services. By not making data link mandatory, the flexibility to meet these needs is retained as determined by the marketplace and designers' innovations.

Comment regarding negative cost effects of the Mode S proposal on the DOD was not submitted by the DOD, but by private citizens. The DOD did not reply to the NPRM during the comment period but has since advised that it concurs with the proposal. In any event, under the transponder installation requirements of Section 91.24(a), the proposed Mode S requirements pertaining to transponder installations apply only to U.S.-registered civil aircraft.

b. Major issue number 2: the proposed installation schedule for Mode S transponders creates problems for avionics and aircraft manufacturers, airlines, and aircraft owners and operators. The major concerns expressed in this area were—

(1) Effects on avionics manufacturers. One of the proposal's alleged negative effects to avionics manufacturers was stockpiling. The NPRM proposed that an ATCRBS transponder could continue to be installed in a U.S.-registered civil aircraft after January 1, 1987, but only if it were manufactured before that date. Rockwell International commented that an effect of this requirement would be that manufacturers would have to stockpile ATCRBS transponders for 5 years (from January 1, 1987, to January 1, 1992). Stockpiling was also brought out by another commenter relative to the concerns expressed regarding production problems.

Another alleged negative effect to avionics manufacturers was that the proposal did not allow time which would be needed to design, develop, and produce Mode S transponders. Allied Bendix stated that the ATCRBS production must be moved closer to the January 1992 deadline. Since the typical product development cycle was said to be 18 to 24 months, Allied Bendix recommended that ATCRBS production cutoff for non-U.S.-registered civil aircraft should be 24 months prior to the Mode S implementation deadline. The ATCRBS production cutoff should then be December 31, 1989, if the January 1992 deadline were retained. Allied Bendix commented this would allow availability of equipment which incorporates the latest technology coincident with a market that would justify the investment required to introduce a new product. Otherwise, the company maintained it was left with the choice of either stockpiling ATCRBS transponders or foregoing this market opportunity.

In still another area of negative effect, a manufacturer said that because Mode S transponders would be more complex, they would be more expensive. Therefore, it would be more likely that ATCRBS transponders would be installed up to the 1992 deadline or until the supply of pre-January 1, 1987, transponders was depleted. A consequence of this would be that the onset of a general aviation market for Mode S transponders would be very uncertain.

(2) Effects regarding general aviation. There were several alleged negative effects of the proposal to general aviation, most of them associated with the cost/benefit issue. The NBAA maintained that owners in the lower-price end of the fleet would not equip with a transponder at all when faced with the unavailability of low priced ATCRBS transponders and no expectation of flying above 12,500 feet MSL or in TCA's.

On another related subissue, NBAA said that new hardware and software are 5 to 10 years in the future, and possibly even longer for the lower-price end of the general aviation market. Accordingly, the only foreseeable service that would convince the lower-price portion of the market to buy Mode S is improved real-time weather services.

Although not expressed in terms of specific effects to general aviation, the AOPA submitted several objections to the Mode S proposal questioning the value of Mode S primarily in terms of benefits and cost. In terms of benefits, AOPA submitted that while there may be some small incremental improvement in surveillance from use of Mode S, most, if not all, of the surveillance accuracy improvement will be attributable to the Mode S ground sensors and not the Mode S transponders. Accordingly, the FAA should permit sufficient time after Mode S ground sensors are operational for an objective evaluation of their value prior to forcing an airborne transponder retrofit to achieve a marginal improvement in accuracy. AOPA's other concerns with the impact to general aviation owners/pilots were expressed in terms of cost. For example, AOPA reiterated the concern that Mode S transponder prices would be higher. As a result, purchases would be down, essentially freezing equipment levels in the low end of the fleet. These concerns are discussed under the cost issue above.

Comments of the SSA noted the effects of the proposal on general aviation with respect to consumer choice. SSA agreed with AOPA that service benefits of Mode S, rather than regulation, should be relied upon to motivate pilots to upgrade their equipment. Mode S services must be made available to general aviation aircraft operating below 10,000 feet MSL and not be reserved for jet-powered, high-altitude traffic. For this reason, Mode S should not be made mandatory after January 1, 1992. SSA concluded that ATCRBS should be permitted to be manufactured and installed as long as it does not interfere with either the surveillance system or services.

With respect to what was perceived as an unjustified installation requirement of Mode S transponders, the lack of consumer choice was an issue raised by two other commenters. One comment was that Mode S development will require at least 2 years from the availability of TSO-approved Mode S airborne equipment. The commenter referred to the NPRM which stated that only one Mode S ground radar is expected to be operational by 1988 at an unspecified location. Another commenter voiced a similar concern by saying that under the NPRM, users will be forced to equip with airborne Mode S before the ground stations can provide the same coverage as the older ATCRBS. The commenter's conclusion was that FAA's plan for forcing airborne Mode S equipage is premature.

(3) Effects on aircraft manufacturers. One commenter pointed out that because of technical parameters and data link capability, the Mode S transponder is not physically interchangeable with the ATCRBS transponder and, therefore, current aircraft designs cannot accept Mode S. The commenter suggested that new radio rack mounts, new control panels, new wiring, new cooling, and an additional antenna are needed to accommodate the new installation.

The problem facing manufacturers was also raised by several commenters as a retrofit problem for aircraft operators. Several commenters maintained that a formidable effect of the Mode S proposal would be the problem of retrofitting Mode S transponders in cockpits not adequately designed to accommodate the new equipment. One said that current aircraft designs do not accept Mode S. Installation design changes will be necessary and a development flight test will be required to assure antenna locations and operating characteristics are acceptable. Another suggested that retrofitting of older aircraft should remain voluntary except for aircraft operating in those areas where radar coverage is degraded by high-density traffic.

(4) Effects on airlines. The ATA advised that the proposed installation schedule would affect airlines. When a transponder is removed for maintenance, airlines routinely replace it with another unit and do not reinstall the same transponder equipment in the same aircraft each time.

The defective box is taken to the avionics shop for repair and subsequently installed in a different aircraft within the fleet. Under the proposed January 1, 1987, cutoff date associated with ATCRBS transponders, airlines would be required to retrofit all aircraft prior to the January 1, 1992, Mode S date.

Discussion of installation issues.

The FAA believes that most of the concerns of and effects upon the avionics and aircraft manufacturers, owners/operators, consumers, and airlines can be alleviated by—

(a) changing the last manufacturing cutoff date for ATCRBS transponders which may be installed in U.S. aircraft from December 31, 1986, to December 31, 1989. The additional three years will provide an extended time period within which affected users may effectively plan for transition from ATCRBS to Mode S;

(b) modifying the installation requirements so that—

(1) a transponder that meets requirements of TSO C74b or TSO 74c, and that is manufactured before January 1, 1990, may be removed from an aircraft for maintenance and/or repair, and then be reinstalled on the aircraft from which it was removed. Also, a correctly functioning transponder which meets the requirements of the appropriate TSO may be installed on the aircraft temporarily while the malfunctioning transponder is being repaired.

(2) for fleet operations, a transponder that meets the requirements of TSO C74b or TSO C74c may be removed from an aircraft for maintenance and/or repair, and then be installed on either the

aircraft from which it was removed or on another aircraft in the same fleet. Equipment transferred among fleet aircraft will be considered permanent equipment and not "substitute equipment" under the provision for temporary replacement sets. Accordingly, any equipment installed for the first time in an aircraft of a particular operator's fleet after January 1, 1992, must meet the requirements of TSO-C112 (Mode S).

The FAA believes that the above changes to the installation requirements which appear in the final rule may be expected to:

(i) Eliminate the problem of stockpiling.

(ii) Clarify onset of a Mode S market.

(iii) Allow time for aircraft manufacturers to ensure that new aircraft designs provide adequate space, wiring, etc., to accommodate Mode S equipment; and

(iv) Allow time for operators/consumers to plan for retrofitting which is not mandatory but which could take place in the 1990's as owners/operators consider replacement of ATCRBS transponders.

With respect to the issue of the reluctance to install a Mode S transponder because of associated increased costs, the FAA views as insignificant any disincentive to buy a Mode S transponder because a basic unit costs more than it does today. Most voluntary transponder equipage is due to the perceived benefit in obtaining ATC services. Those services will continue and will be enhanced with Mode S. We believe that users will see that cost as being justified. If some users do not see it as being justified, the rule provides ample time for low end users to equip with ATCRBS transponders, the life of which should extend to near the end of the century.

The proposed rule did not expressly provide for the use or installation of ATC transponders which were manufactured under TSO-C74 or TSO-C74a. The existing rule requires that transponders installed after January 1, 1974, or used after July 1, 1975, meet the requirements of TSO-C74b or TSO-C74c. However, the use of the TSO-C74 and TSO-C74a equipment after July 1, 1975, could be approved by the Administrator if the operator submitted data showing that the equipment met the performance standards of the appropriate class of TSO-C74c and environmental conditions of the TSO under which it was manufactured.

Any equipment which qualified under this provision would be more than eleven years old at this time. While the rule adopted does not make specific provision for such equipment, the FAA will permit the continued use of any equipment manufactured under TSO-C74 or C-74a, if still in use, if that equipment meets the performance standards of TSO-C74c and the environmental standards of the TSO under which it was manufactured.

(c) Major issue number 3: Data link services to be available are indefinite; they lack FAA commitment; operators do not know what data link services will be available nor when. Uncertainty in this area is also likely to be costly to consumers faced with a decision to purchase Mode S transponders (the latter part of this issue is discussed under the cost issue).

Several commenters noted that the FAA made no commitment in the proposal to data link applications, even though data link was put forth as one of the basic benefits to come from the Mode S transponder. Moreover, to obtain the benefits of data link, more equipment would be required, e.g., displays, printers, and input/output devices. This leads to cost and retrofitting problems. The AOPA commented that any forced transition to Mode S transponders should begin only after the FAA, in concert with the aviation user community, has decided what services will be provided on the data link and has created a plan which ensures that investments in equipment to obtain those services will be justified.

Discussion of the data link issue.

While the FAA has not to date issued any rulemaking or technical standards specifically relating to data link, the agency is now engaged in preparation of a data link master plan and the development of a data link program. The FAA expects that informational data link services will be available within a year of the first operational Mode S sensors. In addition, the FAA agrees that there is a need to stimulate aircraft owners to purchase Mode S transponders by accelerating data link development. Data link development to date has been system oriented and has concentrated on the NAS components that are necessary for data link. Agency personnel are meeting with user groups to develop implementation priorities and a schedule which is compatible with the Mode S transponder rule schedule.

With regard to the products and services that the FAA expects to have available for users, the FAA objectives are to—

(a) Develop and implement data link applications which improve aviation safety and efficiency and stimulate Mode S transponder equipage;

(b) Provide data link services at the earliest date that equipment and data base availability permit; and

(c) Provide a focal point for all domestic and international aviation data link standards.

Weather information is currently scheduled to be the first data base available. Therefore, weather services are expected to be the first group of services offered using Mode S data link. The initial set of potential services within this group are terminal forecasts, surface observations Automated Surface Observation System data, Automated Weather Observing System data, winds aloft forecasts, pilot reports, radar summaries, and hazardous weather advisories. The initial implementation of these services may be on a request/reply basis. As the system matures, these services can be provided to a pilot in a more automated manner.

The second group of potential services expected to be available are expanded weather and airport services. These include the Automated Terminal Information System, wind shear alerts, and runway surface winds.

The third group of potential applications expected to be available are initial ATC services. These applications include transfer of communications, altitude assignment confirmation, flight identification, minimum safe altitude warning, traffic information, and uplinking of aircraft position data.

The fourth group of potential applications expected to be available are dependent on the implementation of the advanced automation system. These applications include en route metering, automatic flight service hazardous weather, weather graphics, and clearance delivery.

Each of the above groups of services depends upon specific equipment and data base availability. The indicated order of group implementation reflects the current FAA schedules. The implementation schedule of a data link application within a group depends upon its acceptance by the users and the maturity of the concept. One of the data link program objectives is to provide the greatest number of data link services in the shortest time span.

In regard to the issue of requiring data link, the FAA had considered specifications that would have required some level of data link with every Mode S transponder, but rejected it for two reasons. The basis for rejection was that most users desire the simplest device possible; and secondly, FAA believes that a rule mandating data link would unnecessarily limit the flexibility of manufacturers to develop a range of capabilities that was described under discussion of the cost issue. In consideration of manufacturers' opinions in this area, the FAA has retained the manufacturers' flexibility to meet these needs in accordance with the marketplace and product innovations and not by regulation.

Discussion of other issues.

Issue number 1: The need for automatic pressure altitude reporting equipment.

The NPRM proposed an effective date for requiring Mode C equipment in Group II TCA's of January 1, 1992. For reasons discussed below, the FAA has adopted an effective date in the final rule of December 1, 1987. The basic justification for extending the requirement to Group II TCA's remains the same. The comments which addressed the Mode C issue focused on the need for Mode C in Group II TCA's and on the inclusion of Mode S and Mode C requirements in the same rule, but not on the implementation date for the Mode C requirement.

AOPA opposed the use of Mode C in Group II TCA's saying the FAA had not provided a rationale for extending the use of Mode C transponders to additional airspace. AOPA believes there is little evidence to show that it can help to improve ATC system safety and challenged FAA claims that Mode C would increase ATC effectiveness through greater selectivity in viewing targets or that it would reduce the number of traffic advisories or avoidance vectors. AOPA said that TCA's should be considered individually, and rulemaking action should be taken if it becomes clear that a location warrants such exclusionary provisions based upon traffic volume, complexity, aircraft mix, controller workload, and frequency congestion.

In another view, two commenters said that it would be inappropriate to include two complex issues in one rule, and that Mode S and Mode C should be handled by separate rulemakings.

The FAA does not agree that the use of Mode S transponders and automatic pressure altitude reporting equipment should be separate rulemaking actions. The required use of altitude reporting equipment in Group II TCA's is not a separate issue; rather, it is an extension of its current application in Group I TCA's and above 12,500 feet MSL. Neither can its use be regarded as separate and unrelated to the use of Mode S transponders since its use will logically be required in the same airspace areas where Mode S transponders will be required. Automatic pressure altitude reporting equipment has been required and has been in proven use in conjunction with ATC transponder equipment in Group I TCA's and above 12,500 feet MSL since 1973. The equipment has been used to provide essential aircraft identity, location, and altitude information in those airspace areas where such information provides a fundamental base in providing airspace users safe, orderly, and efficient use of available airspace.

Experience has shown that Mode C has been particularly beneficial in the higher density TCA airspace environment. It was in consideration of this environment that Task Group 1-2.1 of the National Airspace Review (NAR) recommended use of Mode C to reduce radio frequency congestion. The task group's rationale, as stated in Notice 85-16, was that this reduction was necessary to create more efficiency within the system thereby increasing capacity while providing an increased level of safety over operations with non-Mode C aircraft. In particular, the group pointed to weather conditions which cause pilots of VFR aircraft to change altitude to maintain appropriate separation from clouds. In a high density environment, this altitude change is not immediately forwarded to the controller. However, the Mode C readout on the controller's radar display does provide this information. The task group's conclusion was that in busy, complex areas with high concentrations of traffic, a continuous readout of aircraft altitude is a necessity for maintaining a continuous three-dimensional (range, azimuth, altitude) view of the traffic picture.

The FAA concurs with the finding of the NAR task group. The FAA also recognizes that the NAR task group envisioned use of Mode C equipment within a single class of TCA whose proposed establishment criteria were somewhat lower than current Group I TCA criteria and somewhat higher than current Group II criteria. Although the NAR task group related the Mode C requirements to a single class of TCA, the FAA expects similar benefits from use of Mode C in the airspace environment of today's current Group II TCA's. That environment is examined in more detail below.

The designation of a terminal area as a Group II TCA indicates that it is a higher density terminal area which presents complex air traffic conditions resulting from a mix of large turbine-powered air carrier aircraft with other aircraft of varying performance characteristics. There is no reason to believe that the complex nature of a high-density environment, as typified by a Group II TCA, will be altered by slower than expected growth in traffic or even the unlikely event of a sustained static level of traffic into the next decade and beyond. The requirements of the Group II TCA are basic to that environment and they are essentially common to the requirements of a Group I TCA. Furthermore, the requirements are generic in the sense that they could apply to any classification of airspace with similar characteristics. They are requirements designed to afford the greatest protection for the greatest number of people by providing ATC with an increased capability to provide aircraft separation service to minimize the hazardous mix of controlled and uncontrolled aircraft.

The amendment adopted prohibits operation in a Group II TCA without operating Mode C equipment, effective December 1, 1987. The requirement adopted is the same as that proposed in the NPRM except for the earlier implementation date. In consideration of the benefits of having each aircraft in TCA airspace equipped with Mode C, as discussed immediately above, the FAA believes that this requirement should not be postponed to 1992 as originally proposed. In addition, one or more other rulemaking projects under consideration by the FAA at this time would almost certainly have the effect of requiring Mode C in Group II TCA's long before January 1, 1992. These actions include:

- The establishment of a single category of TCA, in which Mode C would be required. This action was recommended by the NAR and also by a TCA Review task group established by the FAA in September 1986, and is part of the airspace reclassification rulemaking now in progress (FAA Docket No. 24455, 50 FR 5055; Docket No. 24456, 50 FR 5046, February 5, 1985).
- The requirement for use of a traffic alert and collision avoidance system (TCAS). The FAA has announced its intention to issue an NPRM by November 1987 proposing to require the installation and use of TCAS equipment by certain operators. The TCAS II system to be proposed will issue traffic alerts for conflicting aircraft equipped with transponders, but will issue conflict resolution advisories only for aircraft equipped with Mode C.

Also, the FAA has received separate petitions for rulemaking, from the Air Line Pilots Association and the Air Transport Association, requesting that the requirement for Mode C equipment be extended to additional terminal areas and other airspace. The FAA has not acted on either petition at this time. Finally, language included by the House Committee on Appropriations in the report on a recent spending resolution (H.J.Res. 730) stated the committee's intent that the FAA substantially expand the airspace in which Mode C equipment is required.

Requiring Mode C equipment in Group II TCA's effective December 1, 1987, rather than January 1, 1992, advances the date by which some operators must acquire Mode C but does not otherwise alter the requirement proposed in the NPRM. The equipment required is common avionics equipment now installed on the aircraft used by most Part 121 and Part 135 operators and many general aviation operators. An adjustment in the implementation date from 1992 to 1987, therefore, does not present any new issues with respect to availability of equipment or costs to operators.

In summary, the FAA believes the benefits of a Mode C requirement in Group II TCA's clearly support the implementation of that requirement at the earliest practical time. An effective date of December 1, 1987, will provide affected operators sufficient time to acquire the Mode C equipment if necessary. The issues related to the expanded Mode C requirement were presented and discussed in the NPRM and the comments received, and the agency has determined that further notice is not required.

Issue number 2: There has been a decline in aviation growth that does not bear out NAS estimates and which makes the mandating of Mode S transponders unnecessary. AOPA said it is clear that the traffic projections upon which the NAS Plan was based in 1980 substantially exaggerate the growth and density of aircraft in the U.S. fleet. The increases suggested will not happen, and any transponder mandate based on those forecasts is misguided at best.

The initial estimate that 19.9 billion in cost savings or benefits over the years 1981–2000 is expected to result from NAS improvements was derived on the basis of a 1981 equivalent system. In other words, the improvements of the NAS were quantified by estimating the cost savings expected to result from a reduction in delays, improved fuel-efficient routing, reduced accidents, and reduced operating and maintenance costs, using as a baseline for comparison the higher expected costs of operating and maintaining the 1981 system in a manner to provide the same level of service to more aircraft. The extent of these benefits was estimated on the basis of the projected increase in traffic levels over the years 1981–2000, which in turn are based on projected increases in the active fleet. The benefits of Mode S estimated in the initial economic evaluation were based on fleet projections made in early 1985 rather than in 1980–81, as the commenter apparently believes was the case. The 1987 projection, which was just released, takes account of declining production trends in general aviation aircraft over the past 5 years as it forecasts a total of 219,300 airplanes in this category as of the year 1998, which is about 40,000 lower than last year's projection. The 1986 estimate of NAS improvement benefits has been reduced to 16 billion mainly to reflect the lower forecasts of aviation activity. The reduction in the fleet of about 15 percent is considerably less than the 50 percent decrease cited by one commenter and has had a proportionately smaller downward effect on the magnitude of expected benefits. In any case, the benefits of an upgraded NAS that were estimated 1 year ago are likely to be realized eventually even if the underlying forecast may have been too optimistic, because the total civil aviation fleet is still expected to increase over the foreseeable future if at a slower pace.

Issue number 3: There are deficiencies and problems with transponder tests. Several concerns were raised in this area. One commenter said there would be increased reliance placed on future transponders, especially on data link; therefore, there is a question whether the frequency with which ATC transponders are required to be tested is adequate.

In reference to the proposed additional testing of transponder output power, another commenter said that unless the FAA can demonstrate that inadequate output from current transponders is causing a degradation in system performance, this part of the rule should not be adopted.

AOPA stated that while it supports the transponder test requirements, the length of time between inspection and test could easily be extended from 24 to 36 months. Inspections conducted at that interval would assure proper operation, but would offset the increased cost of performing the more complex tests both for Mode S and ATCRBS devices.

The current transponder tests and inspection requirement are based on the experience gained with the ATCRBS transponders. At this time, the FAA has no data to substantiate either increasing or reducing the frequency of transponder tests and inspections. Prior to the implementation of the data link, the FAA expects sufficient experience with the Mode S transponder to determine if the frequency of testing should be changed.

The FAA believes that the additional testing of the transponder output power is necessary because it is obvious that inadequate output from transponders degrades the air traffic control system performance. If a transponder does not have sufficient output power to respond to an interrogation, the ATC system does not obtain identification of the aircraft.

The FAA does not concur with the AOPA suggestion that the length of time between inspection and tests could be extended from 24 to 36 months. The FAA has no data to support such a change. Older transponders, without solid-state output, tend to degrade in performance over time. Increasing the length of time between tests and inspection could result in some transponders being out of tolerance for longer periods of time.

Issue number four: There are performance weaknesses and deficiencies associated with Mode S, data link, and Mode C altitude reporting equipment.

Commenters alleged several technical deficiencies and weaknesses with the equipment with respect to both Mode C and Mode S equipment. One commenter said that the current trend to monopulse secondary surveillance radar (SSR)/monopulse ATCRBS may be jeopardized by the addition of any form of Mode S transponders in the airspace using the same ICAO radio channels, because, according to an in-depth British study, angular errors will increase. Another commenter said the Mode S proposal includes the likelihood of a degradation of the primary function of the radar beacon system in its mission of air traffic monitoring and ATC operations. The data rate of message exchanges is restricted by the radar antenna sweep rate which will limit message exchange windows to 120 milliseconds duration at 12 second intervals for en route and 40 milliseconds for terminal radars. Another commenter believes the FAA should defer the Mode S issue until it is proven that the ATCRBS/SSR Mode C, using monopulse techniques now being developed in Europe in the interest of greater accuracy, can no longer meet the national ATC needs.

Concerning the accuracy of Mode C altitude reporting equipment, AIA stated that there is a major problem with altitude reporting accuracy that has not been solved by Mode S; i.e., barometric altitude. Another commenter recommended that the FAA undertake, on a high priority basis, a research and development project to develop an accurate altimetry system to ensure that altitude reports by either ATCRBS or Mode S users will in fact be accurate altitudes. The commenter went on to say that to mandate a whole new system based on present altimetry techniques is premature and a shameful waste of money.

With respect to data link, one commenter maintained that data link hardware for the cockpit is yet to be determined. The packaging and human factors features are not specified. Manufacturers must determine how data will be uplinked and downlinked. Questions remain unanswered. In slightly different language, the ATA said that even though the characteristics of the Mode S transponder are reasonably well defined, the extent to which the data link functions may impact the hardware design is less clear. ATA concluded that it seems appropriate that FAA adjust the dates for transition to Mode S until the airborne architecture for Mode S data link has been firmed up.

Concern regarding need for improved accuracy of altitude data and improved automatic pressure altitude reporting equipment was one of the issues to surface from the original ANPRM. As stated in the NPRM and repeated earlier in the preamble to this rule, the FAA agreed there would be benefits from greater precision in automatic altitude reporting. However, this increased precision would require separate development of the associated technology and procedures. In each case, the FAA would seek public and industry input on the specific proposal. This continues to be the agency position on this issue. Also, in accordance with the previous position on this matter, the FAA believes the existing equipment and procedures are fully adequate to support additional reporting requirements proposed in this notice. The agency will consider the institution of separate rulemaking in the future for adoption of the requested improvements.

The introduction of Mode S transponders is not expected to affect adversely the introduction of monopulse ATCRBS or the angular measurement accuracy of air traffic monitoring operations. The compatibility of ATCRBS with present and future enhancements was considered by the International Civil Aviation Organization (ICAO) in its Secondary Surveillance Radar (SSR) Improvements and Collision Avoidance Systems Panel (SICASP). The panel approved a recommendation at its first meeting recognizing that compatibility had been demonstrated to exist between Mode S and ATCRBS. The panel further recommended that ICAO ensure the maintenance of compatibility of future SSR enhancements in the formulation of standards relating to these enhancements. The recommendation was subsequently accepted by ICAO.

With regard to data link concerns, the FAA believes that the revised Mode S installation schedule will also help provide for a longer transition period to develop and test equipment and procedures, validate benefits, and implement associated data link applications and procedures. Concerns regarding the uses, systems, practices, or procedures involving data link will be addressed through the appropriate procedures of FAA's data link program as evaluation data becomes available. These concerns therefore will not be addressed here since they are beyond the scope of this rule which is limited to the use, testing, and installation of ATCRBS/Mode S transponders.

Issue number 5: Use of Mode S with data link would create a "silent" environment, as opposed to today's "party line" voice communications environment.

According to one commenter, a silent environment is hazardous to flight safety. The commenter said the silent nature of the Mode S data link can lead to sending a message in error which, if undetected, can lead to a fatal accident. Currently, all pilots hear ATC instructions to all other proximate pilots and can catch inconsistent instructions to different aircraft in the same area. The party line would be lost if this rulemaking takes effect.

Contrary to the commenter's perception, the "party line" would not be lost as a result of this rulemaking. Though presented as a major benefit, data link is not being mandated by this rule. This same concern was expressed in response to the original ANPRM and responded to in the subsequent NPRM. These concerns were considered to be well beyond the scope of the NPRM. The FAA stated in the NPRM that in its implementation of data link, it would involve the public in its studies of all factors associated with each kind of message being considered for data link. This continues to be the FAA's position. The FAA recognizes there are advantages and disadvantages to both the party line and data link messages. The benefits to any data link service must outweigh the disadvantages before implementation. One of the objectives of the FAA's data link applications program will be to investigate the feasibility and desirability of providing some of the "party line" information which currently serves to congest voice frequencies over data link. Frequency changes are an example. If frequency changes were removed, voice channels are expected to be less congested, providing more time for users to better monitor other party line information.

Issue number 6: The Mode S requirements may adversely affect DOD fighting capability.

Two commenters believed that the DOD's fighting capability would be diminished by the Mode S rule. The impact of the Mode S transponder rule on the DOD was discussed earlier in this preamble under the major issue of cost. In that discussion, it was stated that comment regarding negative cost effects of the Mode S proposal on the DOD was submitted by private citizens. Even though the proposal did not apply to military aircraft, the DOD has advised the FAA that it concurs with the proposal and is voluntarily incorporating Mode S in its Mark XV transponder. In summary, the DOD has expressed no concerns that mandating Mode S transponders would adversely affect its mission.

Issue number 7: The U.S. may be breaking ICAO agreements if it issues a rule without international approval.

A commenter said that it appears from study of the ICAO charter, to which the U.S. has agreed, that no nation will unilaterally impose rules regarding avionics in its airspace which is available via bilateral ICAO agreement with at least 50 other nations. Another commenter stated that the U.S. should defer implementation of a Mode S requirement until there is full agreement in the ICAO that Mode S is essential and that states are permitted to mandate its use for aircraft of all nations. The U.S. cannot afford an ICAO confrontation.

In regard to the ICAO issue—

(a) There will be no conflict with ICAO. The installation requirement pertains only to U.S.-registered civil aircraft.

(b) If ICAO believes Mode S is unnecessary, it may consult with the U.S., possibly through SICASP, and make a recommendation.

Issue number 8: Issuance of Mode S requirements prior to issuance of the Mode S Technical Standard Order is premature. This point was made by seven commenters before the December 16 comment deadline date for the Mode S NPRM. At that time, the FAA had not as yet issued a Mode S TSO. However, on February 5, 1986, the FAA issued the Mode S TSO, TSO-C112, "Air Traffic Control Radar Beacon System/Mode Select (ATCRBS/Mode S) Airborne Equipment."

ECONOMIC EVALUATION

The following is a summary of the regulatory evaluation associated with this rule. The complete evaluation is in the public docket for inspection.

This rule involves some costs and benefits. There are three aspects of the rule which may have potential economic impacts:

1. The requirement for use of automatic pressure altitude reporting equipment in Group II TCA's after December 1, 1987.
2. The basic Mode C and Mode S transponder and maintenance requirements.
3. The change to maintenance tests for the ATCRBS transponder.

Group II TCA Requirement

The proposal for altitude reporting equipment within Group II TCA's has an effective date of December 1, 1987. Current regulations require only a 4096 code transponder (ATCRBS) within Group II TCA's. The basic transponder does not have the automatic altitude reporting capability associated with Mode C, which is an add-on piece of avionics compatible with nearly all transponders currently in use. There has been a steady trend toward increased equipage in the general aviation fleet with both ATCRBS tranponders and Mode C capability over the past decade. FAA national data reveal that by 1984, about 80 percent of the general aviation (including the commuters and air taxies) was equipped with an ATCRBS transponder and that about one-half of these transponders had Mode C capability. In estimating the cost of this new requirement, the FAA assumed that only those aircraft which presently operate in Group II TCA's and are not equipped with Mode C would be affected. The FAA determined that the cost (discounted) of equipping the 2,368 aircraft that would be affected by this requirement would amount to $1.9 million. In addition, the incremental testing costs associated with Mode C are expected to amount to about $333,500 over the next five years. None of the major air carriers would be affected by this requirement.

There are safety and efficiency benefits associated with the proposal, but they are not quantifiable. Those benefits would result from improved aircraft control within Group II TCA's. Although there is no realistic method for allocating a portion of the overall NAS benefits ($16 billion) to the Mode C regulatory proposal, one can reasonably conclude that the likely benefits would far exceed the associated one-time costs of $1.9 million and recurring cost of $335,000 in view of the central role envisioned for Mode C in the overall NAS Plan.

Mode S Transponder Requirements

The regulatory cost of the Mode S proposal can be developed by estimating Mode S installations and multiplying this forecast by an estimate of the net cost of compliance.

Forecast of Installations

Installations of Mode S transponders are forecast to begin in 1988, with only 10 percent of new installations being Mode S that year, but increasing to 100 percent in 1992. Total transponder installations are estimated as the net annual increase in active aircraft in forecast years, plus 3 percent of the previous year's active aircraft. Using FAA forecasts for future years (FAA Aviation Forecast, February 1987), installations of Mode S transponders would exceed 6,000 in 1992 and average approximately 6,500 a year for the decade from 1991 to the year 2000.

Net Cost of Installation

The added cost per unit for a Mode S transponder, compared to projected transponder equipage in the absence of this regulation, is expected to be approximately $600, installed. This cost estimate assumes installation of a Mode S surveillance transponder with data link connectors, but not the cost of data link processing or display capability. Data link capability could be integrated into the transponder or added later. The price for a Mode S transponder will be about $1,000 more than for an ATCRBS Transponder for about 4 years to account for recovery of development costs.

Based on these assumptions, the regulatory cost of the Mode S proposal for the period 1988 thru 2000 is $21.2 million on a discounted cost basis.

Benefits of Mode S

Mode S is a major component of the NAS Plan. There are many benefits of Mode S, and all are associated with the benefits of the NAS Plan implementation. The benefits of the NAS Plan implementation have been estimated at almost $16 billion in cost savings through the year 2000, due to system operations and maintenance costs, as compared to the "1981 equivalent" systems. There is no reasonable way to allocate a portion of the overall NAS benefits to the Mode S regulatory proposal, but Mode S is considered necessary to successful implementation of the NAS Plan.

Transponder Maintenance Tests

There are additions to Appendix F of Part 43 which provide for tests appropriate for Mode S transponders. There is also an added power output test required for ATCRBS transponders. This test should not involve significant additional costs. The Mode S inspection costs are expected to be moderately higher. Assuming the cost of the Mode S biennial test will be moderately higher than today's tests, any offsetting benefits are in the same general category of general NAS benefits and cannot be specifically allocated to Mode S.

CONCLUSION

Estimated costs of the Mode C requirement in Group II TCA's are $1.9 million for equipment and approximately $333,500 over the next five years for testing. Estimated cost of the Mode S transponder requirement from the year 1988 through year 2000 is $21.2 million on a discounted cost basis. Additional costs of required periodic testing of the Mode transponder will not be significant. The benefits of the Mode C, Mode S, and associated testing requirements adopted in this rule are difficult to quantify, but all are essential components of the NAS Plan. Implementation of the Plan is estimated at almost $16 billion in cost savings through the year 2000. In addition, if one midair collision involving a medium size airliner is prevented by any of the requirements adopted, the additional benefit would be approximately $61,508,000 on a discounted cost basis (based on an accident involving 110 fatalities). Therefore, the FAA has concluded that the benefits of the rules adopted substantially exceed the regulatory costs of those rules.

For the reasons set forth in the above regulatory evaluation summary, the FAA has determined that the rule does not involve a major rule under Executive Order 12991. The Department of Transportation has determined that the rule is considered a significant rule under DOT Regulatory Policies and Procedures (44 FR 11034; February 26, 1979). A copy of the Regulatory Evaluation prepared for this action is contained in the regulatory docket, and a copy may be obtained by contacting the person identified under the caption, "FOR FURTHER INFORMATION CONTACT."

Regulatory Flexibility Determination

The Regulatory Flexibility Act of 1980 (RFA) was enacted by Congress in order to insure, among other things, that small entities are not disproportionately affected by Government regulations. The RFA requires agencies to review rules which may have a "significant impact on a substantial number of small entities." For purposes of RFA, small entities are considered to include small businesses, non-profit organizations, and municipalities but not private individuals. As discussed above under "Economic Evaluation," the FAA concludes that the number of small entities affected by this rule will not be substantial in relation to all aviation-related small entities. In addition, the impact on most such small entities will be substantially less than the threshold for significant impact under agency guidelines. Therefore, I certify that, under the criteria of the Regulatory Flexibility Act, this rule will not have a significant impact on a substantial number of small entities.

SUMMARY OF FAA ACTIONS

Consistent with FAA's plan to modernize the NAS, and the planned role of the Mode S surveillance system in the NAS, the FAA is taking or has taken the following actions:

1. *Issue a TSO for airborne Mode S Transponder*. Concurrently, TSO authorization to manufacture ATCRBS transponders will continue in effect. The intent of continuing the ATCRBS TSO is to allow continued manufacture of ATCRBS transponders for foreign sale and for installation in aircraft destined for foreign countries and to accommodate the DOD.

Issuance of the TSO's is not accomplished through rulemaking and, therefore, the Mode S TSO is not a regulatory portion of this rulemaking package. However, consistent with FAA practice, the proposed TSO for Mode S was made available for public comment. All issues generated by public comment were resolved and TSO-C112 was issued February 5, 1986.

2. *Amend the FAR*. The following changes to the FAR are adopted by this amendment:

FAR Part 43, Appendix F. ATC transponder test and inspection requirements apply to both ATCRBS and Mode S transponders. Test areas include radio reply frequencies, suppression, receiver sensitivity, radio frequency, and output power. Those tests applicable only to Mode S transponders include Mode S diversity transmission channel isolation, Mode S address, Mode S formats, Mode S all-call interrogations, ATCRBS-only all-call interrogations, and squitter. The reference to Section 91.177 is corrected to refer to Section 91.172. The existing requirement for recordkeeping will be retained.

FAR Part 91, Section 91.24(a). For operations not conducted under Parts 121, 127, or 135, ATC transponder equipment installed (or in fleet operations, equipment introduced into the fleet inventory) within specific time periods must meet the performance and environmental requirements of the TSO's specified in the rule. The requirement to meet the Mode S TSO after January 1, 1992, does not apply to—

(a) A transponder which met the requirements of the rule when originally installed, and which is removed from an aircraft for maintenance and then reinstalled on the aircraft from which it was removed.

(b) A transponder which meets the requirements of TSO C74b or TSO C74c and is temporarily installed on an aircraft when the permanent transponder is removed for maintenance.

(c) A transponder which met the requirements of the rule when originally installed in a fleet aircraft, which is removed from the aircraft for maintenance /repair, and which is then installed on either the aircraft from which it was removed or on another aircraft in the same fleet.

Section 91.24(b). All aircraft operated in the airspace areas below are required to have either a combination ATCRBS or a Mode S transponder and automatic pressure altitude reporting equipment. The new requirement applies as follows:

1. in Group I TCA's;
2. in Group II TCA's; and
3. in all controlled airspace of the 48 contiguous States and the District of Columbia, above 12,500 feet MSL, excluding the airspace at and below 2,500 feet AGL.

Automatic pressure altitude reporting (Mode C) equipment is required in Group II TCA's.

Exceptions to the rule are as follows:

1. Operations of helicopters in TCA's at or below 1,000 feet AGL under a letter of agreement.
2. Operations of gliders above 12,500 feet MSL but below the floor of positive control area.

No Group III TCA's exist or are planned.

An editorial change has been made to substitute the word "operating" for the word "operable" in Section 91.24(b). Substitution of the word "operating" for the word "operable" is made to reflect the requirement that transponders must be turned on.

Section 91.90(b)(2)(iii). Aircraft operating in Group II TCA's are required to be equipped with automatic pressure altitude reporting equipment effective December 1, 1987.

The following FAR sections are amended to make transponder requirements under those sections consistent with the amended transponder installation requirements of Part 91:

1. FAR Part 121, Section 121.345(c);
2. FAR Part 127, Section 127.123(b); and
3. FAR Part 135, Section 135.143(c).

Adoption of the Amendments

For the reasons set forth above, Part 43, 91, 121, 127, and 135 of the Federal Aviation Regulations (14 CFR Parts 43, 91, 121, 127, and 135) are amended, effective April 6, 1987.

The authority citation for Part 135 is revised to read as follows:

Authority: 49 U.S.C. 1354(a), 1355(a) 1421 through 1431, and 1502; 49 U.S.C. 106(g) (Revised Pub. L. 97-449, January 12, 1983).

Amendment 135-23

Flight Recorders and Cockpit Voice Recorders

Adopted: March 18, 1987 **Effective: May 26, 1987**

(Published in 52 FR 9622, March 25, 1987)

SUMMARY: This amendment requires improved (digital) flight recorders with additional data parameters for airplanes type certificate before 1969 and operated in Part 121 operations. Review of National Transportation Safety Board accident/incident files for January 1983 to February 1986 revealed the high failure rate of the metal foil flight recorders. The data revealed that 37 recorders (48 percent) had one or more malfunctioning parameters preceding the accident/incident preventing the recording or readout of pertinent data. As a result, post-accident flight recorder examination cannot be relied upon to provide accident investigators with sufficient information to accurately assess the causal interrelationship between man, machine, and environment. The requirement of a digital flight recorder with additional data parameters is deemed the minimum standard necessary to ensure that all of the underlying causal factors of an accident are identified. The amendment also requires cockpit voice recorders on newly manufactured multiengine, turbine-powered airplanes certificated to carry six or more passengers, requiring two pilots by type certification or operating rules for those operations conducted under Part 135. The amendment also specifies that for those operators conducting operations under Part 91 and Part 125 that have installed approved cockpit voice recorders, the Administrator will not use the record in any civil penalty or certificate action. These amendments were based on recommendations from a study conducted by Trans Systems Corporation and a number of safety recommendations by the National Transportation Safety Board.

FOR FURTHER INFORMATION CONTACT: Frank Rock, Federal Aviation Administration, Office of Airworthiness, Aircraft Engineering Division, Technical Analysis Branch, AWS-120, 800 Independence Avenue, S.W., Washington, D.C. 20591; telephone (202) 267-9567.

SUPPLEMENTARY INFORMATION:

Regulatory History

These amendments are based on Notice of Proposed Rulemaking (NPRM) No. 85-1, published in the *Federal Register* on January 8, 1985 (50 FR 949). All comments received in response to NPRM No. 85-1 were considered in adopting these amendments.

Background

For those operations conducted under Parts 91 and 125 of the Federal Aviation Regulations (FAR), there are no requirements that either a flight recorder or a cockpit voice recorder (CVR) be installed. However, in the interest of safety, the Federal Aviation Administration (FAA) has always encouraged the installation of approved flight recorders and approved cockpit voice recorders in airplanes used in those operations.

Section 121.343 of the FAR requires operators to equip each turbine-powered airplane and each airplane certificated for operation above 25,000 feet with an approved flight recorder. For airplanes having an original type certificate issued through September 30, 1969, the flight recorder parameters must include time, altitude, airspeed, vertical acceleration, heading, and radio transmission keying. Airplanes having an original type certificate issued after September 30, 1969, are required to have additional flight recorder parameters indicating pitch attitude, roll attitude, side-slip angle or lateral acceleration, pitch-trim position, control column or pitch control surface position, control wheel or lateral control surface position, rudder pedal or yaw control surface position, thrust of each engine, position of each thrust reverser, trailing edge flap, or cockpit flap or cockpit flap control position.

The CVR provisions for Part 121 operators require a CVR for each large turbine-powered or large pressurized airplane with four reciprocating engines.

Part 135 does not require operators to have flight recorders but does require turbojet airplanes configured to carry ten passengers or more to have a cockpit voice recorder installed.

Since these provisions were adopted, there has been a dramatic change in the air carrier industry. Deregulation has contributed to that change by allowing existing Part 121 carriers to pull out of short-to-medium-range markets, thereby creating a demand being filled by a rapidly expanding commuter airline industry. To meet the equipment needs of the expanding commuter airline industry, manufacturers have developed new fuel-efficient airplanes, including derivatives of airplanes type certificated through September 30, 1969. These airplanes have an expected lifespan well into the next century.

The past rule allowed these derivative airplanes to operate with flight recorder technology that dates back to the 1950's. In the past, cockpit voice recorders and flight recorders were not required of the commuter airline industry based on the premise that the level of passenger service was not sufficient to justify installing these recorders. Increased operation of the short-to-medium-range airplanes by the commuter airline industry, however, has placed them actuarially in a more severe operational environment than airplanes type certificated through September 30, 1969, creating the need for additional data collection.

Discussion

This amendment revises a § 91.35 and adds a new § 125.202 that specifies that the Administrator will not use the cockpit voice recorder record in any civil penalty or certificate action. The purpose is to encourage operators to voluntarily install cockpit voice recorders in airplanes that are used in those operations where they are not required. The installed equipment must be approved and must continue to meet the airworthiness requirements under which the airplane is type certificated and operated.

This amendment substantively revises § § 121.343 and 135.151. For operations conducted under Part 121, this rule requires retrofitting all airplanes type certificated through September 30, 1969 (currently using a six-parameter foil-type flight recorder), with a six-parameter digital flight recorder within 2 years from the effective date of the amendment. In addition, these flight recorders must be upgraded to 11-parameter digital flight recorders within 7 years after the effective date of this amendment. The 11 parameters consist of those currently required plus the following: (1) pitch attitude; (2) roll attitude; (3) longitudinal acceleration; (4) control column or pitch control surface position; and (5) thrust of each engine. They are required to perform within the ranges, accuracies, and recording intervals specified in Appendix B of Part 121.

All newly manufactured airplanes having an original type certificate issued through September 30, 1969, are required to have 17-parameter digital flight recorders installed after 2 years from the effective date of this amendment.

The requirements for airplanes type certificated after September 30, 1969, do not change except for the substitution of longitudinal acceleration for lateral acceleration.

For those operations conducted under Part 135, the amendment requires the installation of a CVR for all multiengine, turbine-powered airplanes certificated to carry six or more passengers and requiring two pilots by certification or operating rules, that are newly manufactured 2 years from the effective date of this amendment.

"Manufactured" means when the airplane inspection acceptance records reflect that the airplane is complete and meets the FAA-approved type design data. An airplane manufactured and then placed into storage prior to sale is considered manufactured on the date it is completed prior to being placed in storage.

Discussion of Comments

In response to NPRM No. 85-1, the FAA received comments from 29 interested persons. The majority of the comments received express opposition to the proposals based upon the costs involved in complying with the proposed requirements. More specifically, most of the opposition is directed to the digital flight data recorder proposals.

The proposals in NPRM No. 85-1 address three issues: (1) recorder information to be used only for accident investigation purposes; (2) digital flight data recorders in specific airplanes operated under Part 121 of the FAR; and (3) cockpit voice recorders in specific newly manufactured airplanes operated under Part 135 of the FAR. For discussion and analysis purposes, each issue will be addressed separately.

In its comments on NPRM No. 85-1, the National Transportation Safety Board (NTSB) states that the FAA has not entirely satisfied the intent of all its safety recommendations made to the FAA concerning enhancement of flight recorder standards required to provide adequate data for accident and incident investigation purposes and identifies six specific shortcomings. All the issues raised by the NTSB in its comments to NPRM No. 85-1 had been forwarded previously to the FAA as NTSB safety recommendations. These issues were considered in the development of the NPRM and have been addressed by FAA formal responses to the recommendations, the NPRM, or the preamble to this rule.

Since 1967, the NTSB has issued a total of 53 recommendations regarding CVR's and flight recorders. Of this total, 38 recommendations were forwarded to the FAA. The remaining 15 recommendations were issued to industry groups such as U.S. air carriers, the Air Line Pilots Association, the Allied Pilots Association, airplane and rotorcraft manufacturers, etc. Of the 15 industry recommendations, 5 remain open (A-82-101 through -105).

Of the 38 NTSB recommendations issued to the FAA, 26 recommendations are "CLOSED" through FAA/NTSB staff coordination and 12 recommendations remain in an "OPEN" status. The FAA is continuing to address these remaining 12 "OPEN" recommendations. The following is a summary of the "OPEN" recommendations that are mentioned in the NTSB's comments to the docket.

Recommendations A-82-067 and -108 recommend requirements for improved CVR's and flight recorders for rotorcraft and are being dealt with under a separate rulemaking action.

Recommendation A-82-106 recommends the development of a technical standard order (TSO) for CVR's and flight recorders. Proposed TSO-C111, which contains standards for CVR and flight recorders and combined CVR's/flight recorders, was published in the *Federal Register* on April 12, 1985. The final version of the TSO is presently undergoing internal FAA coordination prior to issuance.

Recommendations A-82-064 through -066 recommend that flight recorders currently required on fixed-wing aircraft operated under Part 121 be improved and that such aircraft manufactured after a certain date be equipped for flight recorders with additional parameters.

Recommendations A-82-107 and -109 through -111 recommend that turbojet fixed-wing aircraft certificated for six or more passengers not now required to have CVR's or flight recorders be required to have CVR's and flight recorders with additional parameters.

In its comments to the docket regarding Recommendations A-82-064 through -066, the NTSB requested that the FAA reconsider its action on Recommendation A-82-066 and require 32 parameters for flight recorders on newly manufactured fixed-wing aircraft operated under Part 121. The FAA has determined that an increase in the required parameters to 17 represents an appropriate balance of costs and benefits.

In its comments to the docket on Recommendations A-82-107 and -109 through -111, the NTSB acknowledged that the FAA has satisfied its recommendation with respect to CVR requirements for aircraft operating under Part 135. The NTSB urged the FAA to require flight recorders for all multiengine turbine-powered aircraft operated under Part 135. The FAA agrees with the NTSB that requiring flight recorders on multiengine turbine-powered aircraft operated under Part 135 would provide helpful accident investigation information. However, the FAA continues to believe that the benefits of such regulation would not be commensurate with the associated costs.

In its comments to the docket, the NTSB states that the rule does not provide flexibility to accommodate advancing technology. The FAA agrees that changes in aeronautical technology may at some future date require changes to this rule. However, to issue a rule that includes the degree of flexibility necessary to accommodate future technology that is not presently defined is impracticable. When new design features are identified, the FAA can and will evaluate them during development of the type certification basis and take whatever actions are necessary to maintain the required safety level. If additional parameters or interfaces between electronic systems call for special requirements, they will be issued as appropriate. Consistent with rulemaking policy and as experience is gained with such future novel technologies, consideration will be given to revising the appropriate rules. In the new, fly-by-wire aircraft control system design, the one-to-one correlation from crew input to the resulting control system response does not exist. That, and other new design features, may require the FAA to propose and adopt additional parameters to be recorded, over those currently required by the operating rules.

The NTSB continues to urge that the FAA initiate further rulemaking to require flight recorders in multiengine, turbine-powered, fixed-wing airplanes operated under Part 91 or 125. A careful review of the benefits required to offset the cost of requiring flight recorders in the class of airplanes recommended by the NTSB operating under Part 91 or 125 shows that the anticipated benefits will not support such a requirement. The rule does encourage the installation of such equipment by stating that flight recorder records will not be used by the Administrator in any civil penalty or certificate action.

In its comments to the docket, the NTSB stated that it was disturbed that the FAA has not taken the initiative to propose rulemaking consistent with the standards recently adopted by the International Civil Aviation Organization (ICAO). This amendment is consistent with the recent Amendment 17 to ICAO Annex 6, Part I. The NTSB, in its comments, intermingles ICAO "requirements" and ICAO "recommendations." Requirements are binding on the ICAO member states, while recommendations are not. This amendment is in full agreement with the ICAO requirements in Section 6.3 of Annex 6 and in many respects is in agreement with the ICAO recommendations in that section. Attachment D to ICAO Annex 6, Part I, contains detailed flight recorder guidance to member states. In that attachment, ICAO recommends the 32-parameter flight recorders for certain types of airplanes. The FAA agrees with both ICAO and the NTSB that more data is always preferable and also agrees with the ICAO position that the increased data parameters be recommendations and not required parameters. The FAA believes that the parameters specified in this amendment are sufficient to identify accident probable cause and that the additional parameters (up to 32) have not been shown to be cost beneficial.

Recorder Information for Accident Investigation

One commenter supports the proposed amendments to §§ 91.35 and 125.202. A second commenter opposes the amendments, contending that the FAA should use the data as necessary to improve piloting skills. The FAA does not agree that the Administrator should use the cockpit voice recorder record in any civil penalty or certificate action. As stated in the notice, the purpose is to encourage operators to voluntarily install cockpit voice recorders in airplanes where they are not required. The information from the record is to determine the cause of the accident and not to place blame. Improvement of piloting skills can be obtained by current requirements, such as the biennial flight checks.

Digital Flight Data Recorder

The FAA received seven comments supporting the notice as it relates to the digital flight data recorder proposals.

One commenter contends that any airline retrofit requirement can be satisfied by equipment currently in production and agrees with the FAA's estimates of equipment costs. This commenter asserts that his estimate of maintenance cost savings to airlines which replace foil recorders with digital flight recorders reflects a savings of $600,000 annually based on a 100-airplane fleet.

Another commenter agrees with the requirement to replace metal foil-type recorders with digital types because accident investigation would be simplified and accomplished with greater accuracy but expresses concern that the 2-year period for replacement of existing metal foil-type recorders with digital types may not be realistic. The commenter asserts that the assumption was made that the new digital recorders would be directly interchangeable with existing foil-type recorders in all installations. Although many metal foil-type recorders in service are packaged in rectangular (standard ½ Air Transport Rated (ATR) long) containers, almost 1,400 Lockheed Model 109C metal foil-type recorders packaged in a spherical container have been delivered to customers, and many are still in service today. This commenter also recommends that the two-phase (2-year/7-year) plan be replaced with a single-phase program for incorporation of the 11 parameter recorder and that the time limit for completion be compatible with existing airline maintenance cycles. The FAA recognizes that the Lockheed Model 109C recorder is configured differently from the standard ½ ATR long container but still believes that the 2-year phase-in period, with proper planning, is sufficient to reconfigure the mounting rack for installation of the new recorder.

Two commenters, while supporting the proposed rule, believe that the requirements should be further expanded to maximize the information available from accident investigations and contend there is sufficient justification to require all airplanes operated under Part 121 and type certificated through September 30, 1969, to be upgraded to the 17-parameter digital recorder within 2 years from the effective date of the amendment. The FAA agrees that 17 parameters would derive more information from the accident. However, the 11 parameters required for the aircraft type-certificated through September 30, 1969, via the 2-step program will enhance the accident data available to investigators with minimum cost and out-of-service time for the airplane. The FAA does not believe that the additional 6 parameters will provide the safety benefit necessary to offset the additional cost. Both commenters are of the opinion that all airplanes involved in Part 135 operations should be required to carry the digital flight recorders within 2 years from the adoption of the amendment. One of the commenters also questions the use of a single parameter for measuring engine thrust and believes a more accurate method is to measure the N_1 speed and fuel flow for each engine. The FAA considers these issues to be outside the scope of this current rulemaking action.

One other commenter considers the 17-parameter digital recorder as being too limited and not consistent with recently adopted International Civil Aviation Organization (ICAO) requirements (32 parameters) applicable to airplanes over 60,000 pounds. The FAA evaluated these issues in the Trans Systems study while preparing the notice and concluded that based on the information available at that time, the proposals were the most cost beneficial in terms of accident prevention through accident investigations. It should also be pointed out that the final ICAO document addresses only new certificates of airworthiness issued after 1989. The comment is outside the scope of the notice, and there is insufficient justification by the commenter to issue a supplemental notice that addresses the recent ICAO standards. The FAA concludes that the existing air carrier fleet of 2,000 plus transport category airplanes do need the new digital type 11-parameter recorder, and this regulatory action should proceed.

Another commenter agrees with the proposals and believes they are necessary to ensure that adequate data is available for accident investigations. The commenter contends that in the affected airplanes, there will be adequate room, and little weight penalty for the digital flight recorder to be installed and serviced without difficulty. The FAA agrees with these comments.

One commenter states that the requirement for converting to a 6-parameter digital recorder should be deleted as it is unlikely to enhance accident investigation to any extent and recommends requiring the 11-parameter recorder in 7 years. The FAA does not agree because adequate time has been allotted for foil-type recorders to be replaced and then expanded to the 11-parameter recorder without undue hardship on the airline industry. Research of the National Transportation Safety Board (NTSB) records indicates that 48 percent of the recorders recovered from accidents or incidents were not functioning. The foil-type recorder would likely increase in failure rate over the 7-year period, resulting in increased inspections, decreased time between overhaul, and possible increase in FAR maintenance violations, as well as not having the data available in the event of an accident or incident. There is a definite need to replace the foil recorders as soon as possible.

In addition to the above, the FAA received 18 responses to the notice expressing opposition to the digital flight recorder proposals on the basis of the economic impact of complying with the proposed requirements. Five commenters provided estimated cost figures for retrofitting their CV-580 turbopropeller airplanes to comply with the proposed requirements. These estimates ranged from $14,000 to $50,000 per airplane modification. Estimated cost figures that were provided for other models of airplanes came within the above low and high estimates per airplane modification. In addition, one commenter notes that the FAA estimated costs in the notice did not consider the loss of value on currently owned flight recorders, and this commenter estimates this value at $6,000 per recorder. With the loss of $6,000 per recorder added to his estimate, this brings the total estimated cost to approximately $9,500 below the average of the low and high estimates above. Another commenter states that he has observed a price increase per flight recorder of approximately $5,000 to $6,000 since the issuance of NPRM No. 85-1. To properly respond to these comments, the FAA has prepared a detailed cost estimate using the latest available information in its Regulatory Evaluation, and the FAA considers these costs the most realistic in determining the cost of compliance with the final rule.

The NTSB suggests the addition of longitudinal acceleration as a parameter. The NTSB contends that longitudinal acceleration is vital for determining the effect of wind shear, braking, and airplane performance and is a much more significant parameter than some others presently recorded. The NTSB is responsible for determining the probable cause of and contributing factors to an accident and is the prime user of the flight recorder data. The FAA agrees with the NTSB that the longitudinal accelerometer is necessary in identifying the contributing factors to an accident or incident, and has changed the requirements for the 11-parameter recorder by substituting longitudinal acceleration for pitch trim for the post-September 30, 1969, certificated airplanes. In addition, the FAA has substituted longitudinal acceleration in place of lateral acceleration for newly manufactured airplanes. The FAA has reviewed type design data for airplanes affected and finds that other than the reconnection of wiring at the tri-axis accelerometers in the post-September 30, 1969 airplane, and the substitution of a longitudinal accelerometer for a pitch trim synchro or a potentiometer in the 11-parameter airplane type certificated through September 30, 1969, these changes are not significant.

Another commenter opposes the digital flight recorder proposal but does not operate any airplanes that require modification to comply with the proposal. This commenter did not provide any information or data to support this opposition. The FAA does not agree with this commenter.

One commenter contends the foil-type flight recorders are satisfactory for the older turbopropeller-driven airplanes because their design and operating environment is sufficiently different from that of turbojet-powered airplanes. The FAA does not agree that the foil-type recorder is adequate in the current accident investigation environment because of the inaccuracies that can occur between the routine maintenance times and the operations check before flight. A recent review of NTSB accident files has found the inservice failure rate of the foil recorders to be unacceptable.

Several commenters state that many of the older affected airplanes will likely be retired shortly after the anticipated effective date in early 1987. The FAA does not agree that the older airplanes should be exempted because of a supposed early retirement from service. Certain operators may retire their affected airplanes from their fleets, but these airplanes most likely will be in service with other operators, and the requirements will continue to be applicable. Because the airplanes comply with the new rules, the operator has a more marketable and valuable airplane at the time the airplane is placed on the market. The FAA does agree that an airplane in service for a considerable length of time may be considered to have a low probability of operational and mechanical "surprises." However, unanticipated events such as fatigue may still occur and human factor information is relevant in accident investigations involving old and new airplanes alike. A digital flight recorder as an investigative tool will provide insight into these issues.

One commenter, an all-cargo carrier operating under Part 121 with nine CV-580 airplanes, states that the additional cost to comply with the proposed requirements would create a serious financial hardship on the company. This commenter contends that: the recent accident data for CV-580 airplanes does not justify any need to change the type of flight recorder in use; the CV-580 airplane design and operating environment has not changed in the past 25 years; and, the additional parameters and significant additional cost have not been justified on a cost versus flight safety benefit basis. Furthermore, this commenter contends that the cost to retrofit the digital flight recorder in his CV-580 airplanes could easily run as high as $450,000. The FAA recognizes that this commenter's contention of $50,000 per airplane for complying with the proposed requirement would be significant. However, no information or data was provided to show how this figure was derived. Most prudent operators will not incur these extremely high costs to comply with this final rule. The basis for this conclusion is explained in the section of the regulatory evaluation discussing FAA's response to these comments. A pilot-induced accident can occur any time with any airplane, and the accident history of a specific airplane type should not be a basis for exclusion from this regulation. Every accident must be evaluated to determine the probable cause and related events, and these types of airplanes are operated in sufficient numbers in passenger service to require the same accident investigation tools as other Part 121 airplanes.

One commenter recommends that airplanes type certificated prior to January 1, 1958, be exempt from the proposed requirements. The FAA does not agree with this recommendation, because every accident must be adequately investigated to determine the probable cause and identify actions to prevent accidents of that nature.

One commenter contends that the estimated nonrecurring cost for the proposed 2-phase retrofit of digital flight recorders on its association's member fleet is $49.5 million for 2,000 airplanes, not counting cash loss due to out-of-service time, and contends that the FAA's cost estimates are inconsistent. Furthermore, this commenter asserts that the FAA's stated basis for the proposed rule is based upon erroneous information and speculative estimates of future "unknown hazards" that would be identified by the expanded parameter digital recorders; that the FAA did not present any data that conclusively shows that the probable cause of any U.S. air carrier accident could not be determined because of the use of 6-parameter foil-type recorders; and that properly maintained 6-parameter flight recorders have not served the industry and Government well in developing accident prevention measures.

This commenter recommends the notice be withdrawn because of the lack of adequate justification presented by the FAA. In addition, this commenter recommends that if the FAA decides to require the improved flight recorders regardless of the airline safety record, a single-step program that provides at least 7 years for accomplishment would minimize the impact on the airlines. Furthermore, the FAA should reevaluate its cost versus benefit estimates using economic data presented in this response and by other commenters. The FAA has reevaluated the cost data, and the Regulatory Evaluation reflects these changes. With respect to the basis for this rule change, experience has shown that unexpected accident scenarios and unusual combinations of circumstances will occur.

Another commenter, while not opposing the proposal, recommends deleting the 6-parameter step in the program and recommends going directly to the 11-parameter digital flight recorder requirements, because the 2-year implementation period for retrofit is considered unrealistic. This would permit installations to coincide with maintenance schedules. This commenter also states that the notice assumed that foil-type recorders are apparently interchangeable with digital types in all cases and states that the digital flight recorders and the spherical configured foil-type are not, in fact, directly interchangeable as assumed. As previously stated, the FAA does not agree that the implementation program should be lengthened or that the 2-year implementation program is unrealistic. This commenter presented no information to support this assertion. The FAA has reevaluated the time frames for implementation against the availability of modification kits and/or digital recorders necessary for complying with these requirements and continues to find them achievable and realistic. Further, a slight additional cost for replacing the spherical foil recorder with the rectangular digital recorder is reflected in the revised Regulatory Evaluation.

One commenter recommends that § 121.343(c)(6) and (d)(6) be changed to indicate that radio communication either to or from Air Traffic Control (ATC) is acceptable. The FAA intent was to record the airplane transmitter keying which would be *to* ATC. The rule has been changed accordingly. This commenter also recommends that the word "large" be added before the words "turbine engine powered" in § 121.343(b) to clarify that the requirement applies only to large airplanes. The FAA does not agree this change is necessary, because all airplanes operated under Part 121 must be type certificated in the transport category and the FAA is not aware of any small airplanes, weighing less than 12,500 pounds maximum certificated takeoff weight, being operated under Part 121. If small airplanes do in the future operate under Part 121, the FAA sees no reason to treat them differently from large airplanes.

Another commenter suggests replacement of the foil-type recorders with digital types on attrition basis and contends that the price increase of 100 percent in the last 3 years for the foil medium will achieve this objective. The FAA does not agree, because there is no assurance of attrition as suggested, and no assurance that digital flight recorders will be installed within a reasonable period of time. Furthermore, the FAA has no way of controlling flight recorder prices.

These amendments are based on a number of NTSB recommendations and a study conducted by Trans Systems Corporation, completed in May 1983 for the FAA Office of Aviation Safety, entitled "Cockpit Voice and Flight Data Recorder Evaluation." The study evaluated a number of CVR/flight recorder equipment requirements and options, one of which was the adoption of all NTSB recommendations. The Trans Systems study is available in the Public Docket for review. Copies of the FAA replies to NTSB safety recommendations concerning CVR's/flight recorders are available from the FAA Office of Aviation Safety.

Cockpit Voice Recorder

The FAA received 16 comments in response to the cockpit voice recorder proposal, with 9 commenters opposing the proposal and 7 commenters expressing support.

Three commenters contend that the requirements should apply only to those turbined-powered airplanes with a seating configuration of ten or more, excluding pilot seats. One commenter states that no rationale is given to reduce the number to six and that, historically, the dividing line has been ten passenger seats. The FAA does not agre with the increase to ten because of the large number of small airplanes that operate with between six and nine passengers and that are required by Part 135 to have two pilots for conducting Instrument Flight Rules operations with those airplanes.

The NTSB's recommendation, which was used as the basis of the Trans Systems Corporation study, was about the number of accidents involving six-passenger turbine-powered, multiengine airplanes in air taxi and corporate/executive operations in which the accidents circumstances remain unknown.

One commenter asserts that the increased fuel consumption to carry these recorders should be considered in the economic evaluation. The FAA agrees that the increased fuel cost should be added in the analysis, and the economic evaluation addresses the increase.

Another commenter contends that the purpose of cockpit voice recorders is to fix the blame for an accident or incident. The FAA does not agree because the purpose of the recorder is to determine the probable cause of the accident, and this should not be construed to mean "fix the blame." The same commenter asserts that some 80 percent of all accidents are caused by pilot error but provides no basis for this assertion. The FAA does not agree with the 80 percent figure but recognizes that a significant number of accidents can be attributed to pilot error. Finding a pilot's action or inaction as a causal factor in an accident or incident is not intended to be the same as "fixing the blame."

One commenter contends that most of the airplanes to which this rule would apply operate in a very limited environment or portion of the airspace and that there is insufficient time to record much voice communication when a problem arises. The commenter further contends that the cause of most accidents in this area is probably pilot error during takeoff and landing and doubts that the addition of CVR's would shed any new light on the cause or circumstances surrounding any accident. The FAA does not agree that there is insufficient time to record meaningful voice communications. It is not the quantity but rather the quality of such data that may determine the cause in the relationship between the pilots, the airplane, and the operating environment at the time of an accident. Also, it is not just the voice communications that are useful in determining a cause but all recorded noise, i.e. switch actuation, engine revolution, warnings, etc.

One commenter asserts that the cockpit voice recorder would not add to the level of safety of a flight, and its only benefit, that of aiding accident investigation, is abstract and unproven. The FAA agrees that the CVR does not add to the level of safety of a specific flight but does not agree that the usefulness is abstract and unproven. There are years of experience with cockpit voice recorders in Part 121 aircraft that attest to the benefits to be derived from the recorders.

Another commenter contends the proposed rule is discriminatory since many small multiengine airplanes that not turbine powered are certificated to carry more than six passengers. The FAA does not agree that the rule is discriminatory.

One commenter asserts that an operator should be given the option of installing a flight recorder instead of the cockpit voice recorder because more information may be obtained from the former. As a regulatory proposal, this comment is outside the scope of the notice.

Three commenters contend that the CVR has proven to be an invaluable tool in accident/incident investigations and that it would be prudent to require a CVR for any multiengine, turbine-powered airplane operating under Part 135 with two pilots and carrying six or more passengers regardless of the date of manufacture of the airplane. The FAA evaluated this issue in the Trans Systems study while preparing this notice but concluded that the estimated costs would exceed the potential benefits if all multiengine airplanes are included.

Regulatory Evaluation

The FAA has completed a detailed regulatory evaluation of the final rule which is available in the regulatory docket. It is similar in form to the regulatory evaluation of NPRM No. 85-1, but many revisions have been made in response to comments that addressed the notice. The evaluation also incorporates more current cost and fleet forecast information.

The major findings of the evaluation of the final rule are summarized below. However, FAA's response to those comments that addressed the regulatory evaluation of the notice is presented in its entirety.

I. Discussion of Comments Addressing the Regulatory Evaluation of the NPRM

Numerous comments were received to NPRM No. 85-1 that addressed the regulatory evaluation of the proposed rule. These comments have been considered by the FAA and are discussed in this section. The regulatory evaluation of the final rule follows this discussion of comments. The FAA has revised its evaluation in many respects to reflect issues raised by the commenters.

A. Comments on Costs

A.1. Part 121 Proposals

Numerous comments criticize FAA's estimates of the cost to retrofit existing pre-1969 type-certificated airplanes operated under Part 121 with digital flight recorders and to upgrade these airplanes to record 11 parameters of information. In its regulatory evaluation of the notice, FAA considered the costs of various digital flight recorder and flight data acquisition unit equipment combinations that would meet the proposed requirements and estimated that the maximum cost for any of the various options, including labor and signal sources, would be approximately $22,000 per airplane. Comments have been received arguing that FAA's costs were significantly underestimated and that compliance costs could exceed $50,000 per airplane, more than twice FAA's highest estimate. Further, commenters also state that additional costs would result because airplanes would need to be removed from service to accomplish the retrofit; that the two-phase approach (initial digital recorder retrofit within 2 years followed by the upgrade to 11 parameters within 7 years) would result in higher compliance costs than a one-phase approach because airplanes would need to be taken out of service twice; that design certification costs had been omitted; and that many spherical foil recorders were still in service that would create special installation problems when replaced with digital recorders in standard one-half ATR boxes.

The FAA was unable to find evidence that the very high compliance cost estimates of approximately $50,000 would be incurred by cost conscious operators. These high costs could be realized if the equipment were purchased through third parties and if the installation work was not scheduled to coincide with regular maintenance intervals. However, because most prudent operators would negotiate with recorder equipment manufacturers to obtain the best fleet purchase price, reflecting quantity discounts, and because cost-conscious operators can be expected to use scheduled maintenance cycles as efficiently as possible, FAA expects that actual compliance costs will in most cases be similar to those estimated by the FAA. The FAA has raised its equipment cost estimates by 10 percent to reflect inflation in the prices of recorders since the notice was prepared 2 years ago.

To allow for the additional cost which may be incurred by some operators who find it necessary to rely on a modification shop to perform the retrofit as a complete package, including the provision of all necessary equipment, the FAA has added 40 percent to its estimated cost values for recorders, flight data acquisition units (FDAU's), and signal sources. This modification shop markup factor has been applied to 15 percent of the airplanes affected by the retrofit provisions of this final rule.

The FAA also found that air carriers, when performing contract maintenance work for other carriers, and modification shops charge labor rates of approximately $35 to $40 per hour. Further, the contractor's overhead expenses are already included in the labor rates charged to customers. The FAA has used a $40 labor rate in its evaluation of the final rule, slightly higher than the $35 value used for the notice.

Other factors may affect the compliance costs of the rule, not all of which may necessarily have been identified by the FAA or the commenters. Installation labor may in some instances exceed FAA estimates, or, as one commenter argued, recorder manufacturers may increase their prices following implementation of the rule (which the FAA does not expect to be much of a problem because of competition among manufacturers). However, to allow for these contingencies, the FAA has performed a sensitivity analysis on its cost estimates. This enables comparisons to be made of the potential effects variations in the cost estimates may have on the overall desirability of the new Part 121 recorder standards.

The FAA maintains its expectation that both the digital retrofit and parameter upgrade work can be completed without requiring airplanes to be removed from service specifically for this purpose. Although it will require careful planning on the part of operators, both the digital recorder retrofit and parameter upgrade work can be completed in steps and integrated into regularly scheduled maintenance intervals over the 2-year digital conversion compliance period and the 7-year parameter upgrade compliance period. Similarly, installation labor costs can be partially reduced by anticipating maintenance procedures involving aircraft disassembly that would also provide an opportunity to install the additional information parameter signal sources and wiring.

Engineering design and certification costs are expected to be relatively minor for each airplane type/recorder equipment combination that operators elect to install. These costs usually have already been incurred by recorder equipment manufacturers and are reflected in the prices they charge their customers. Further, many of the airplane types affected by the amendments are operated by foreign carriers with similar or more stringent recorder requirements; therefore, the engineering work has, to a large extent, previously been completed. Finally, when prorated over the total number of airplanes converted using a particular equipment combination, the per-airplane cost attributable to design and certification is expected to be an extremely small portion of the overall equipment and installation costs. Nevertheless, a cost sensitivity analysis has been added to the regulatory evaluation, and this should adequately provide for the occasional situation where design and certification costs present a special problem.

The FAA agrees that for those aircraft equipped with the Lockheed spherical foil recorder, a new mounting rack will be required which will add about $500 to the installation costs. However, because of a previous rule change, any spherical recorders that had originally been installed in the wheel wells should have already been relocated to the rear of the airplane. Therefore, no additional installation costs should result from the need to relocate the recorder.

Commenters also question the FAA's estimate of the annual recorder maintenance savings that could be realized as a result of replacing foil recorders with digital recorders. One commenter states that converting to digital equipment would result in carriers experiencing a range of from $2,400 additional annual maintenance expense per airplane to $1,800 annual maintenance savings per airplane. This compares to the $2,500 annual maintenance savings estimate used by the FAA in the notice, which the FAA considered a conservative reduction of flight recorder manufacturer savings estimates that ranged from $3,000 to $5,000 annually per airplane.

The FAA maintains its expectation that because of the higher reliability of digital recorders in comparison to aging foil recorders, and the continuously increasing cost of the foil medium, digital recorders should result in net maintenance savings for operators. However, because of the concerns raised by commenters, the FAA has reduced its estimate of annual maintenance savings from $2,500 per airplane to only $1,500 per airplane in its analysis of the final rule. Further, the FAA also maintains its original expectation that the additional signal sources will require maintenance only infrequently and that any maintenance costs which may result from the signal sources will be negligible in comparison to savings resulting from the conversion to much more reliable digital equipment.

Similarly, the FAA expects that the relatively higher mean time between failures of digital equipment in comparison to foil recorders should actually reduce the potential for flight delays because of minimum equipment list requirements, rather than increase this possibility, as some commenters state.

Another commenter states that the short remaining life of older airplanes would reduce the maintenance savings attributable to digital recorders well below FAA estimates. However, in its regulatory evaluation of the notice, the FAA allowed for forecast fleet attrition in estimating the total maintenance savings that would result from the rule. Further, the FAA did not take credit for maintenance savings realized by digitally equipped airplanes that had voluntarily converted or were expected to voluntarily convert in the absence of the rule. Finally, in later years of the 15-year analysis period, the FAA reduced the percentage of active airplanes forecast in those years that would realize maintenance savings as a result of the new rule. This was because newly manufactured airplanes just entering service are currently delivered with digital recorders and because airplanes that operators have voluntarily converted generally would be the airplanes with the longest remaining service life.

One commenter expresses concern that airplanes exempt from the noise standards of Part 36 until January 1, 1988, would be retired shortly after the effective date of the flight recorder final rule. As stated in the notice, the FAA expects that the availability of hush kits will enable many of these airplanes to remain active after their noise exemption expires. Similarly, Boeing 707 and McDonnell Douglas DC-8 airplanes, other than DC-8-70's retrofitted with noise compliant engines, were excluded from the fleet expected to be affected by the proposed rule because of other Part 36 noise standards that became effective in 1985. However, since the notice was written, hush kits have become available for both DC-8's and Boeing 707's, and a limited number of these airplanes are now expected to remain in service. Therefore, based upon preliminary information prepared by the FAA's Office of Environment and Energy, these types of airplanes have been added to the forecast of the pre-1969 type certificated airplane fleet expected to be affected by the rule.

Other comments state that any additional weight attributable to the digital retrofit and parameter upgrade would result in slightly higher fuel consumption. The FAA agrees and has added a weight penalty cost factor to its analysis.

Comments were received stating that in its cost estimates the FAA did not allow for the lost residual value of foil recorders when the new rule makes them instantaneously obsolete. The FAA recognizes that this is a valid consideration, however, this factor has already been reflected in the analysis. It is the remaining utility or useful life of the foil recorders that will be lost as a result of this rule change, or in other words, the foregone *benefits* that would have been derived from their continued use. (The equipment costs of the old foil recorders are sunken costs that will not affect, or be affected by, any decisions made concerning the new requirements. Therefore, these costs are not relevant for the present analysis and have been excluded.) However, the regulatory evaluations of both the notice and the final rule have assessed the *improvements* in accident investigations and consequently safety which will result from the new requirements, i.e., the *additional* or *incremental* benefits which will be realized over and above the current rule. Therefore, to offset the incremental benefits by the lost benefit of the old recorders (i.e., the lost residual value) would represent double-counting. Further, because the incremental cost of the new requirements is on average only about one or two cents per enplanement over the analysis period (based on *FAA Aviation Forecasts Fiscal Years 1986–1997*), operators should not find it difficult to recover their additional costs in the fares collected from passengers who are the ultimate beneficiaries of the safety improvements.

The NTSB expresses concern in its comments that the longitudinal acceleration parameter had not been included among the additional information parameters proposed in the NPRM. The FAA has reconsidered this question and decided that longitudinal acceleration should be included. Although this change from the original proposal may at first glance appear potentially expensive because it will affect airplanes type certificated after September 30, 1969, as well as those type certificated before that date, it will have a relatively minor cost impact. First, the FAA has determined that virtually all post-1969 type certificated airplanes are equipped with tri-axis accelerometers, capable of sensing longitudinal, vertical, and lateral acceleration; and in most cases the longitudinal axis sensor is wired to the recorder. Second, for airplanes type certificated before 1969, the FAA will allow operators to substitute longitudinal acceleration for the pitch trim parameter originally proposed for existing airplanes that will be required to upgrade to 11 parameters and to substitute longitudinal for lateral acceleration on newly manufactured airplanes subject to the new 17-parameter requirement. A slight additional signal source expense will be incurred over that estimated in the notice for airplanes upgrading from 6 to 11 parameters, and the regulatory evaluation of the final rule has been revised accordingly.

One commenter states that the 1983 Trans Systems Corporation report entitled "Cockpit Voice and Flight Data Recorder Evaluation" indicated that expanding the retrofit requirement for pre-1969 airplanes from the 6-parameter digital conversion to the 11-parameter upgrade requirement would more than double the total compliance costs of the rule change. The Trans Systems Corporation study did state this. However, the Trans Systems Corporation study presented an overview of numerous cockpit voice recorder and flight recorder options for airplanes operating under various operating regulations of the FAR. The FAA's regulatory evaluations of NPRM No. 85-1 and of the final rule are much more focused and have analyzed the specific option that has been proposed and adopted in much greater detail than was possible in the Trans Systems Corporation study. The FAA's cost estimates of the final rule indicate that the 11-parameter upgrade requirement will increase total compliance costs by only about one-third over the total costs of a rule that would require just the 6-parameter digital retrofit for existing pre-1969 airplanes.

One commenter expresses concern that the new flight recorder requirements would create problems for the international exchange of aircraft for either sale or lease. The FAA does not agree. Many foreign countries currently have flight recorder requirements that exceed those of the United States. The new requirements being adopted by this final rule will reduce the differences between the airplanes of U.S. operators and those of many foreign operators. This may in fact facilitate, rather than hamper, the international exchange of aircraft.

Other comments state that the development of new recorder technology and the expense of maintaining old foil recorders would result in the gradual attrition of foil recorders. Therefore, they concluded, this rulemaking action was unnecessary. The FAA disagrees. Voluntary replacement of foil recorders with digital equipment has already occurred in about one-third of the pre-1969 fleet affected by this rulemaking, and in its analysis of the notice the FAA estimated that, in the absence of a new rule, this trend would have continued until about one-half of the pre-1969 fleet had been voluntarily converted at the time the new rule would mandate the conversion. Although attrition could have been expected to continue beyond this deadline in the absence of the rule change (and this has been considered in estimating the compliance costs of the final rule), it alone would not have resulted in a timely replacement of the remaining foil recorders still active in the fleet. Further, attrition would not have resulted in the voluntary upgrade of the safety information parameters that will be required by this final rule.

One commenter states that because his operation intends to purchase new airplanes in the near future, there would not be enough time to fully depreciate the investment in the new flight recorders that would be required by this rule. Although this is true, the resale value of the operator's current fleet should be enhanced because the airplanes have already been equipped with the digital recorders that many potential customers will also require for their operations. The value of these assets should not be lost when the airplanes are placed on the market.

A.2. Part 135 Proposals

Some commenters disagree with the FAA's estimates of the cost to equip newly manfactured airplanes operated under Part 135 with cockpit voice recorders. In NPRM No. 85-1, FAA estimated that the cost would be $7,275 per airplane based upon the least expensive unit available at the time. This estimate was the CVR cost to the airframe manufacturer but did not include any markup by the airframe manufacturer, only installation labor. One commenter obtained a quote from an airframe manufacturer of about $30,000 per airplane. This higher cost could be incurred only if a more expensive model CVR were to be installed in the airplane and if the airframe manufacturer significantly marked up the recorder price over its own acquisition cost. However, the FAA's cost estimates in the final rule are based on the expectation that CVR equipment will be furnished by the airplane customer to the airframe manufacturer for installation. This is the common practice in the industry for avionics equipment because it enables prudent operators to negotiate with equipment manufacturers to obtain the best fleet purchase price and quantity discount.

Another commenter states that the FAA did not consider the reduced complexity and associated costs of recorders meeting the Society of Automotive Engineers Aerospace Standard (AS) 8039, "Minimum Performance Standard—General Aviation Flight Recorder," issued in January 1985. Although this standard was not available in 1983, the original Trans System Corporation study used order of magnitude recorder cost estimates reflective of simpler recorder designs in its evaluation of various Part 135 recorder options. Further, the FAA has contacted various recorder manufacturers and determined that none currently plan to produce a separate CVR unit meeting the AS 8039 standard, although some are considering a combined cockpit voice/flight data recorder unit. Therefore, the FAA has again based its CVR equipment cost estimates for the Part 135 amendment on a relatively inexpensive CVR model that is currently available. The FAA has adjusted its cost estimates in the evaluation of the final rule to reflect 1986 equipment prices.

Another comment states that the additional weight of the cockpit voice recorder would result in a slight increase in fuel consumption for those airplanes that will be required to install them. The FAA agrees and has added a weight penalty cost factor to its analysis.

One commenter expresses concern that the additional weight of the CVR would sometimes result in payload restrictions. FAA does not expect that this will be a problem for the types of airplanes affected by the rule. The turbine-powered airplanes typically used by Part 135 operators have sufficient performance capability to accommodate the slight additional weight of the CVR without affecting most operations. In high-altitude, hot-temperature conditions where the airplane will be operating closer to its performance limits, the weight of the CVR is light enough that careful planning of fuel load should prevent impacting payload any further than it might already have been impacted by those conditions. Situations where the CVR weight would be critical to conducting an operation with the desired payload are expected to be extremely rare.

A related comment also argues that the added weight of the recorder would result in higher engine operating temperatures and consequently higher engine maintenance costs. The FAA does not agree. The additional weight of the CVR installation will only be about 30 pounds, and this represents only a very small fraction of a percent of the overall weight for those airplane types that will be effected by the rule. Any possible effect on engine operating temperatures, and consequently engine maintenance costs, will be so slight as to be unmeasurable.

B. Comments on Benefits Analysis

B.1 Part 121 Proposals

Some of the comments addressing the analysis of benefits focus on the particular examples of accident investigations that were cited in the evaluation and on the discussion of advances in understanding wind shear that the FAA attributed to expanded parameter recorders.

One commenter states that the FAA provided no evidence to support its contention that the expanded parameter flight recorder requirements "are necessary to ensure that all of the underlying causal factors of an accident are identified" and that the FAA only referenced two accidents in the notice in discussing the benefits of recorders. The benefits analysis in the complete regulatory evaluation, available in the docket, discussed six accidents or incidents supporting the value of expanded parameter recorders, although only three were referred to in the summary of the regulatory evaluation published in NPRM No. 85-1. The availability in the docket of the complete regulatory evaluation was stated in the notice.

Another commenter states that no benefits would be realized by replacing foil recorders with digital recorders during the first phase of implementation. Airplanes retrofitted with digital recorders would be allowed to operate for at least 5 years before being required to upgrade to 11 parameters. The FAA does not agree with this argument. The FAA reviewed NTSB data from 1983 to early 1986 and found that in about 49 percent of the accident or incident investigations in which foil recorder tracings were read, a recorder malfunction or maintenance deficiency resulted in the partial or complete loss of recorded information. Further, the two-phase approach is intended to allow operators to perform all retrofit work during regularly scheduled maintenance cycles.

One commenter questions specific details of one of the examples. In the notice, the FAA stated that following the May 1979 crash of a DC-10 at Chicago, the expanded 17-parameter digital flight recorder provided evidence that the loss of control was a direct result of the unwanted retraction of the airplane's left leading edge slats, not the separation of the No. 1 engine and pylon assembly itself. The commenter asserts that this statement is erroneous because the recorder did not record slat retraction since power to the recorder was when the engine and pylon separated. Identification of the unwanted slat retraction was not based on recorded information of the left inboard and outboard slat positions. These parameters were lost when the No. 1 engine and pylon separated, together with certain other parameters that received electrical power from the No. 1 a.c. generator bus. However, the flight recorder continued to record all remaining parameters for approximately one-half of a minute until the recording ended upon impact. It was the *correlation* of the remaining recorded aircraft and flightcrew information, together with simulator tests, knowledge of the DC-10's performance characteristics, and other investigation findings, that resulted in the conclusion that the left leading edge slats had retracted.

Other comments question the validity of the FAA's claim that recorders contributed significantly to a better understanding of wind shear. The comments state that almost all wind shear accidents involved airplanes equipped with 6-parameter foil recorders and that sufficient information was available to determine probable cause. The FAA does not disagree that the presence of wind shear could be determined from the limited parameter recorders and other sources of accident information. However, only a limited amount of information concerning airplane performance or flightcrew response in these situations could be obtained. Although very few wind shear accidents or incidents involving expanded parameter recorders have occurred, they have provided significant amounts of information about wind shear. Further, preliminary analysis of information recorded by the expanded parameter recorder installed aboard the Lockheed L-1011 that crashed in Dallas in August 1985 has provided strong evidence confirming theories about especially hazardous microburst characteristics that previously had only been simulated in laboratory tests.

Comments also state that, because the wind shear problem was well on the way to being solved, the FAA was relying on the detection of other "random unknown safety hazards." The commenter states that the FAA's estimate of a range of between zero and four accidents, distributed around a mean of 2, that might be prevented during the 15-year analysis period as a result of information learned from the expanded parameter recorders was speculation. FAA expects that the information learned from the expanded parameter recorder, especially in the area of human factors, could result in the prevention of a number of accidents in the future. However, because the relationship between accident investigations, increased understanding of potential hazards, improvements in equipment and crew training, and the actual prevention of future accidents is somewhat indirect and cannot be easily measured, the FAA will not attempt to assign a specific probability distribution to the potential number of future accidents that might be prevented, as it did in the evaluation of the notice. Rather, the FAA will show that if just one accident is prevented as a result of this rule, the compliance costs, in terms of costs per fatality avoided, fall well within the range of values generally considered acceptable by various regulatory agencies when implementing safety regulations. It is very reasonable to expect that at least one accident will be prevented as a result of information learned from the expanded parameter recorders required by this final rule.

One commenter states that the Trans Systems Corporation study concluded that because of the well-known and proven characteristics of the pre-1969 airplanes, "the probability of not being able to determine a cause of an accident for these aircraft is considered to be low." The FAA agrees that the basic cause of an accident usually can be detected from limited parameter recorders and other sources of accident information. However, as stated previously, only a limited amount of information concerning airplane performance and flightcrew response during these accident situations can be obtained, and the opportunity to improve flightcrew reactions in potentially survivable situations is lost.

One major point needs to be made concerning those comments that address the analysis of benefits. Comments tend to focus on details of specific examples but miss the more general principles that these examples were attempting to demonstrate. The detailed information that expanded parameter flight recorders make available allows a much more objective accident analysis to be completed. Investigators can compare and correlate the actual performance of the airplane with that intended by the flightcrew, and, most importantly, the numerous assumptions that investigators often must make in determining probable cause can be reduced significantly. Thus, more specific and focused corrective actions can take place, especially in the area of human factors and crew training, than would otherwise be possible in the absence of this additional information. Further, the graphic depiction of an accident scenario that can be reconstructed in great detail will leave a much more lasting impression on the part of flightcrews. This concept is very similar to the old maxim "A picture is worth a thousand words." The opportunity that a detailed, specific accident report provides for flightcrews to more thoroughly think through their own possible reactions if they were to find themselves in a similar situation is a learning experience that cannot be obtained from an accident report characterized by more general conclusions based upon numerous assumptions.

B.2 Part 135 Proposals

Comments that address the benefits of the proposal to require that CVR's be installed on newly manufactured turbine-powered airplanes operated under Part 135 generally question the value of such recorders. Commenters state that the safety benefits that the FAA attributed to the CVR's were overstated.

The FAA considers this rule to be a long-term corrective acton reflecting recent changes in the structure of the airline industry. Part 135 operations have grown significantly since airline deregulation in 1978 opened up the commuter industry, yet only turbojet airplanes equipped with 10 or more passenger seats are currently required to have CVR's (Section 135.151). Implementation of this final rule will eventually result in all turbine-powered airplanes operated by the commuter industry being equipped with a recorder of some type—a CVR for those smaller airplanes with 30 seats or less operated under Part 135, and both a CVR and flight recorder for those larger airplanes with between 31 and 60 seats operated under Part 121. The FAA recognizes that these benefits will not be realized immediately, but expects that this long-term approach will provide the public with the safety benefit of more thorough investigations of accidents involving those airplane types that now carry a much larger share of passenger traffic than in previous years, yet not unduly burden the operators of these airplanes.

II. Evaluation of Costs and Benefits

The 15-year period of the regulatory evaluation includes the years from 1987 through 2001. Values are expressed in 1986 dollars, and present values have been calculated using the 10 percent discount rate prescribed by the Office of Management and Budget.

A. Costs

1. Amendment of the flight recorder requirements for aircraft operating under Part 121.

The major cost components of complying with the amendments to the Part 121 flight recorder requirements include the digital flight recorder, an FDAU necessary to convert input signals into a digital format, signal sources (such as transducers, potentiometers, etc.) when none are presently available for the additional parameters to be recorded, labor costs for installation, and ground support equipment to maintain the digital recorders. Offsetting these retrofit and upgrade costs are the present value of the retrofit costs that would have eventually been incurred to replace many foil recorders reaching the end of their economic lives subsequent to the digital conversion deadline established by this final rule, and the reduction in the cost of maintenance for a digital flight recorder in comparison to the older, electromechanical foil recorders.

In response to comments, a cost factor has been added reflecting the fuel penalty resulting from any increases in airplane weight that are attributable to the new rule. Cost estimates have also been modified to reflect substitution of the longitudinal acceleration parameter for other parameters originally proposed in the notice and special retrofit installation requirements for airplanes equipped with older, spherical foil recorders.

Further, the FAA expects that the majority of operators will find it most economical to purchase recorder and FDAU equipment directly from the manufacturers of that equipment, even though the actual installation work may be contracted out. However, in some instances an operator may have a modification shop provide the equipment as well as the labor. This would increase the retrofit costs to the operator because the modification shop marks up the parts it supplies. This additional unit cost in converting some airplanes has been considered in estimating the costs of the final rule.

Other cost factors may potentially affect the compliance costs of this rule. These factors include the possibility that recorder manufacturers might attempt to increase the prices of their equipment following implementation of the rule (which is not expected to be a very significant problem because of competition between manufacturers), that in some special cases design engineering and certification costs may not be fully included in equipment costs, or that installation labor may exceed FAA's estimates, even when the work is carefully planned ahead of time. To allow for these contingencies, the FAA has performed a sensitivity analysis on its cost estimates.

For airplanes operated under Part 121, the present value total cost of the various digital flight recorder requirements in this final rule, after deducting maintenance savings and the present value of costs which would result from the expected future attrition of many foil recorders in the absence of this rule, has been estimated to be approximately $27.6 million. These costs are summarized in Table 1 below:

Table 1
Summary of Part 121 Flight Recorder Costs
Present Value—1986 Dollars
(Thousands)

Initial Retrofit with Digital Recorder	$24,870
Upgrade from 6 to 11 Parameters	8,612
Newly Manufactured Aircraft	1,385
Ground Support Equipment	2,504
Fuel Penalty	1,824
Subtotal	$39,195
Less Anticipated Foil Attrition/Digital Replacement	(3,689)
Less Maintenance Savings	(7,928)
Total Cost	$27,578

Should the contingencies allowed for in the cost sensitivity analysis result in actual costs that are 25 percent higher than estimated, and actual deductions that are 25 percent lower, the total cost could increase to approximately $40.3 million. These costs represent discounted values of incremental costs incurred as a result of the final rule for the 15-year period between 1987 and 2001.

The revised unit costs and additional cost factors used in evaluating the final rule are summarized in Table 2.

Table 2
Summary of Revised Assumptions Used in Estimating
Costs of Amendments to Part 121
Flight Recorder Requirements

1. Initial retrofit from foil to digital flight recorder:

Direct replacement, single unit digital flight recorder

Equipment	*Installation*
$15,420 combined FDAU/flight recorder unit	$0

Separate flight recorder and FDAU

Equipment	*Installation* (including 6-to-11 parameter upgrade)
$11,000	$1,400 labor (35 hours @ $40 per hour, FDAU in avionics bay)
$11,000 mini-FDAU	$1,900 signal sources
$22,000	$3,300 Total

2. Upgrade from 6-parameter digital to 11-parameter digital flight recorder:

Direct replacement flight recorder capable of recording 11-parameters as single-unit

Equipment	*Installation*
$2,200 Modification kit (when required)	$2,000 labor (50 hrs. @ $40 per hour, FDAU/recorder in rear of aircraft)
	$1,900 signal sources
	$3,900 Total

Direct replacement flight recorder requiring external mini-FDAU to record 11-parameters

Equipment	*Installation*
$11,000 mini-FDAU	$3,300 (same as separate FDAU and flight recorder installation above)

3. Installation of 17-parameter vs. 6-parameter digital flight recorder during assembly of newly manufactured aircraft:

$4,800	average FDAU/flight recorder cost differential over 6-parameter options
1,400	labor (35 hrs. @ $40 per hour)
2,175	signal sources
$8,375	Total

4. Miscellaneous Costs
   a. Recorder, FDAU, and signal source equipment costs increased 40 percent when purchased through modification shop rather than directly from manufacturer.

b. Retrofit of spherical foil recorders—$500 additional cost to install rack for standard ½ ATR long container.

c. Lost asset value of obsolete foil recorders—$4,500 per unit.

d. Fuel penalty 15 gallons annually for each additional pound of weight added to transport category airplane. Current fuel price $0.85 per gallon. Average additional weight estimated at 10 pounds for airplanes subject to retrofit and 25 pounds for newly manufactured airplanes requiring 17 parameters.

e. Digital recorder ground support equipment (maintenance and testing)—$55,000 per set.

5. Maintenance Savings—Foil to Digital Conversion:

$1,5000 annually per airplane

Source: Equipment price quotations from flight recorder and FDAU manufacturers, labor and signal source estimates from FAA aircraft engineering and maintenance staff, air carrier maintenance personnel, and modification shop personnel.

2. Amendment requiring cockpit voice recorders on certain newly-manufactured, turbine-powered aircraft operated under Part 135.

The equipment that will be required to comply with this proposal includes the cockpit voice recorder, the control unit with area microphone, and the vibration mounts, connectors, and other hardware required for installation. The manufacturer of a relatively inexpensive unit currently available indicates that this equipment could be purchased for approximately $9,500 per set. Adding 15 hours of labor at $40 per hour for installation, the total cost of equipping a newly manufactured airplane with a CVR has been estimated to be $10,100.

The maintenance cost of a CVR is approximately $150 per 1,000 hours of operation. The FAA estimates that the Part 135 aircraft affected by this proposal are utilized a maximum of 1,600 hours per year. Annual maintenance costs are therefore estimated to be $240.

The additional airplane weight resulting from the CVR is approximately 30 pounds. Based upon the 14 gallons of fuel estimated to be consumed annually for each pound of weight carried aboard typical commuter airplanes affected by this rule, and current jet fuel prices in the $.80 to $.85 per gallon range, the FAA estimates that the cost of additional fuel attributable to the weight of the CVR will be approximately $350 per year for each airplane.

Estimating the number of multiengine, turbine-powered airplanes certificated to carry six or more passengers and requiring two pilots, which will be manufactured during the 15-year period of this analysis and operated under Part 135, is extremely difficult because the commuter market is undergoing a major transition. A new generation of aircraft developed specifically for the expanding commuter industry has recently begun to enter service. These new aircraft, most of which are large enough to operate under Part 121, are expected to dominate the commuter market in the years to come, but the exact impact that they will have on the future market share of the older generation commuter aircraft which operate under Part 135 is difficult to predict.

Because of the uncertainty characterizing this transitional period, the FAA estimated a range of costs based upon a low delivery rate of 120 aircraft per year and a high delivery rate of 240 aircraft per year in the regulatory evaluation of the notice. However, the FAA has reviewed current trends in the delivery of new turbine-powered airplanes with airframe manufacturers or their representatives and found that its original estimates for Part 135 were somewhat high. Therefore, the FAA has revised its forecast downward for the evaluation of the final rule and estimates that only between 75 and 125 new turbine-powered airplanes for Part 135 operators will be delivered annually during the period of this analysis.

Applying the unit cost values discussed above to these delivery rates and discounting yields present value total costs which range from $8.3 to $13.8 million.

B. Benefits

1. Overview of Benefits Analysis

Estimating the benefits of flight recorders and cockpit voice recorders is difficult because a recorder is an investigative tool, and unlike other airborne safety devices, the absence of a flight recorder or cockpit voice recorder cannot be considered the cause of or a contributing factor to an accident involving that airplane.

Therefore, the benefits of flight recorders and cockpit voice recorders can only be measured in abstract terms; that is, how the recorder's contribution to determining the cause of one accident can lead to corrective measures to prevent other similar accidents, or, in other words, preventing the opportunity cost of lost information. It is not possible to accurately predict the number of accidents that would have occurred had these corrective actions not been taken. Nor is it possible to look at accidents wherein the probable cause remained elusive and state with assurance that the cause would have been positively determined and corrective action taken if the accident airplane had recorded more information. To demonstrate the utility of flight data and cockpit voice recorders, the benefits analysis of the regulatory evaluation examines the types of accidents in which recorders have been or could have been the key element in determining the cause of an accident.

2. Proposal to amend the flight recorder requirements for aircraft operating under Part 121.

The accident investigations cited in the regulatory evaluation demonstrate how expanded parameter flight recorders have been effective in the determination of an aircraft structural, mechanical, or systems failure. This information has led directly to corrective actions such as aircraft modifications or changes in operating procedures that can prevent future accidents. Further, the determination that an accident was *not* caused by an airplane mechanical, structural, or systems problem can also be quite beneficial because costly but unnecessary design analyses or modifications to an airplane prompted by hypotheses rather than conclusive evidence can be prevented. Similarly, use of expanded parameter flight recorders could prevent an unnecessary suspension of an airworthiness certificate and avert economic losses to passengers and carriers alike. Although such costs are difficult to quantify, the benefits of avoiding these costs must be recognized.

Another benefit resulting from the determination of accident cause through expanded parameter flight recorders is the ability to define more precisely those operational problems that need to be addressed by research and development programs. The most prominent example of this is wind shear. Expanded parameter flight recorders have made, and continue to make, significant contributions towards understanding this hazardous phenomenon and improving pilot training programs so that flightcrews are better able to handle wind shear encounters. At least one averted accident has been attributed directly to the improved techniques that have resulted from the wind shear program.

In the regulatory evaluation of the notice, the FAA developed a probability distribution of possible future accidents that could be prevented as a result of the expanded parameter recorder requirements. However, the relationship between accident investigations and the actual prevention of future accidents is somewhat abstract and cannot be directly observed. Further, the prevention of accidents is the cumulative result of numerous related learning experiences, only one of which is the feedback made possible through recorded accident information. In most cases it is not possible to link a prevented accident with a specific source of learning, if in fact it is even possible to identify most situations where an accident has been averted. The accident that does not occur often goes unnoticed. For these reasons, the FAA has reconsidered its original approach, and has determined that a meaningful probability distribution of the future accidents that may be prevented as a result of this final rule cannot realistically be assigned. Any effort to do so would be an attempt to give the analysis a greater degree of precision than the nature of the problem and the availability of information can support. However, because the various arguments presented in the regulatory evaluation demonstrate how expanded parameter recorders enable the detailed correlation of accident investigation information and contribute to much more specific corrective actions, it is highly probable that at least one accident, if not more, will be prevented as a result of information learned because of the amended flight recorder requirements which are being adopted in this final rule. The benefits of flight recorders are realized particularly in the area of human factors analysis providing information on how flightcrews respond to hazardous situations, and this information is valuable for preventing future accidents regardless of whether it is learned from an accident involving an older or newer airplane model.

The FAA estimates that the benefits that will be realized from a typical catastrophic accident that is avoided in the future will be the prevention of approximately 110 passenger and crew fatalities, the loss of the airplane, and the associated accident investigation costs. The standard average air carrier hull value of $8.9 million for a destroyed airplane and the standard NTSB major accident investigation cost of $953,000 have been used to estimate the quantifiable benefits for each accident prevented.[1]

Discounting these values as a uniform series of payments over the 15-year period of the analysis (to allow for the random nature of accidents that may be prevented anywhere within that period) at the 10 percent discount rate prescribed by OMB yields an average quantifiable benefit of $5.2 million for each accident prevented. From this information and the previous cost analysis, the cost per fatality avoided has been determined. This is discussed subsequently in subsection C, "Comparison of Costs and Benefits."

3. Amendment requiring cockpit voice recorders on certain newly-manufactured, turbine-powered airplanes operated under Part 135.

The benefits that will result from the Part 135 amendment requiring cockpit voice recorders on all newly manufactured multiengine, turbine.powered airplanes certificated to carry six or more passengers and requiring two pilots are very similar to those achieved from flight recorders on Part 121 aircraft. Implementation of this rule will eventually result in all turbine-powered airplanes operated by the commuter industry being equipped with a recorder of some type—a CVR for those smaller airplanes with 30 seats or less operated under Part 135, and both a CVR and flight recorder for those larger airplanes with between 31 and 60 seats operated under Part 121. Therefore, the traveling public would benefit from the learning opportunities that more thorough investigations would allow.

The CVR's are particularly useful for human factors analysis. Although frequently the aircraft system malfunction, weather situation, or other causal factor can be identified, without the recorder it is difficult to ascertain whether or not the flightcrew responded to the emergency situation appropriately. The lack of this information makes it difficult to develop techniques that could benefit future travelers caught in similar situations. CVR's also can pick up other information useful to investigators, such as engine sounds, audio alarms and signals, and the sounds of some switches and control activation.

There have been a number of recent accidents involving turbine.powered airplanes operated under Part 135 in which a CVR would have greatly assisted in the accident investigations. This is especially true of the December 1984 Embraer Bandeirante accident in Jacksonville, Florida. The airplane crashed shortly after takeoff, but the exact cause of this accident has been extremely difficult for investigators to pinpoint. The other fatal accidents include three landing accidents and one training accident. Investigations of all of these accidents would have been enhanced if recorded information were available. Adoption of this final rule will prevent future occurrences of this problem in many newly manufactured airplanes operated under Part 135 and will contribute to the prevention of future accidents.

The FAA estimates that the benefits that will be realized from a typical catastrophic commuter accident that is avoided in the future will be the prevention of approximately 12 passenger and crew fatalities, the loss of the airplane, and the associated accident investigation costs. An average hull value of $1.0 million for a typical used turbine-powered airplane and the previously cited major accident investigation cost of $953,000 have been used to estimate the quantifiable benefits for each accident prevented.

Discounting these values as a uniform series of payments over the 15-year period of the analysis (to allow for the random nature of accidents that may be prevented anywhere within that period) at the 10 percent discount rate prescribed by OMB yields an average quantifiable benefit of $1.0 million for each accident prevented. From this information and the previous cost analysis, the cost per fatality avoided has been determined. This is discussed subsequently in subsection D, "Comparison of Costs and Benefits."

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[1] See *Economic Values for Evaluation of Federal Aviation Administration Investment and Regulatory Programs* (Report #FAA-APO-81-3), and *Economic Analysis of Investment and Regulatory Decisions—A Guide* (Report #FAA-APO-82-1), FAA Office of Aviation Policy and Plans. Values have been adjusted for inflation as prescribed in these guides.

C. Comparison of Costs and Benefits

1. Amendment of the flight recorder requirements for airplanes operating under Part 121.

The FAA has estimated that the total compliance costs of meeting the new Part 121 flight recorder standards will be approximately $27.6 million. The cost sensitivity analysis indicated that this figure could increase to approximately $40.3 million. If one or more catastrophic accidents are prevented, which is a highly probable consequence of this rule change, then the loss of at least one transport category airplane and 110 fatalities will be avoided.

This will prevent aircraft hull value and accident investigation costs of $5.2 million (discounted present value). Deducting the prevented hull loss and accident investigation costs from the total compliance costs yields that portion of costs that will go entirely toward saving lives. Based upon the average of 110 fatalities avoided for each accident prevented, the maximum cost per fatality avoided will fall between $203,000 and $319,000, depending on whether the higher costs allowed for in the cost sensitivity analysis are in fact incurred. These are maximum values for the cost per fatality avoided and will be less if more than one accident is prevented as a result of this rule.[2]

2. Amendment requiring cockpit voice recorders on certain newly-manufactured, turbine-powered airplanes operated under Part 135.

The FAA has estimated that the total compliance costs of meeting the new Part 135 CVR requirement will range from $8.3 to $13.8 million, depending on the number of new airplanes delivered during the 15-year period of this analysis. If one or more catastrophic accidents are prevented as a result of information learned from these CVR's, then the loss of at least one commuter airplane and 12 fatalities will be avoided. This will prevent aircraft hull value and accident investigation costs of $1.0 million (discounted present value). Deducting the prevented hull loss and accident investigation costs from the total compliance costs yields that portion of costs that will go entirely towards saving lives. Based upon the average of 12 fatalities avoided for each accident prevented, the maximum cost per fatality avoided will be between $602,000 and $1.1 million. However, there is a greater likelihood of realizing the potential benefits as the cost per fatality avoided increases because there will also be more airplanes equipped with CVR's in active service. Further, the cost per fatality avoided will be less if more than one accident is prevented as a result of this rule.

III. International Trade Impact Analysis

The amendments will have little or no impact on trade for either U.S. firms doing business in foreign countries or foreign firms doing business in the United States. The amendments will affect only U.S. air carriers because foreign air carriers are not subject to Part 121 or 135. Foreign air carriers are prohibited from operating between points within the United States; therefore, they will not gain any competitive advantage over the domestic operations of U.S. carriers. In international operations, foreign air carriers are not expected to realize any cost advantages over U.S. air carriers because many foreign countries have even more stringent recorder requirements than those adopted in this final rule. Therefore, there will essentially be no trade impact.

IV. Regulatory Flexibility Determination

The Regulatory Flexibility Act of 1980 (RFA) was enacted by Congress to ensure that small entities are not unnecessarily and disproportionately burdened by government regulations. The RFA requires agencies to review rules that may have "a significant economic impact on a substantial number of small entities."

All of the rule changes will directly affect those air carriers operating under Parts 121 and 135 that are classified as small entities. However, with one exception, they are not expected to result in "a significant economic impact on a substantial number" of small entity air carriers.

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[2] The prevented accidents that may result from this rule could occur at any time during the period of this analaysis. Generally, there is a social preference to realize benefits at an earlier rather than later time, and when a specific monetary value has been assigned to a particular benefit, discounting is used to reflect this time preference. Benefits realized earlier will have a higher present value than those realized later. However, when it is difficult to assign a specific monetary value to a benefit and it is therefore expressed in other units for comparison to costs (in this case the benefit unit is the number of fatalities avoided), discounting of the benefit units would only serve to introduce an element of specious accuracy into the analysis and is therefore inappropriate. Realistically, the actual benefit units can only be compared to the present value of costs, with the understanding that if it could be measured more precisely, the time preference would be to realize the benefits as early as possible.

The following evaluation analysis explains the reasons for this determination. In developing estimates of annualized net compliance costs, uniform annualized costs for capital investments have been determined by multiplying the amount of the investment by a capital recovery factor appropriate for the discount rate and period of the analysis. A capital recovery factor of .125, based upon a 10 percent discount rate over a 15-year period, has been used in this analysis. Threshold cost values and small entity size standards are those stated in FAA Order 2100.14, *Regulatory Flexibility Criteria and Guidance*. Values have been adjusted to 1986 dollars.

The Part 121 amendment requires aircraft to initially equip with 6-parameter digital flight recorders and later increase the number of parameters to 11. The unit investment cost for the most expensive configuration (separate FDAU and separate flight recorder) has been estimated to be $28,000, including a prorated share of the test equipment cost, and assuming that the foil recorder on this airplane would not have been replaced at any time during the analysis period in the absence of this rule. The uniform annualized cost for this investment is $3,508. Adding the annual fuel penalty cost of $128 and deducting the annual maintenance savings of $1,500 from this amount yields an annual net cost of $2,136 per aircraft.

The threshold values defining a significant economic impact for scheduled carriers are $94,094 if the entire fleet has a seating capacity of over 60 seats and $52,546 for other scheduled carriers. A carrier would have to convert 45 or 25 airplanes, respectively, to exceed either of these thresholds. A small entity is defined as one which owns nine or fewer airplanes. Consequently, any scheduled operator exceeding either of the minimum cost thresholds for scheduled operators as a result of this amendment would not be considered a small entity.

However, the threshold value defining a significant economic impact for an unscheduled operator is only $3,666. A carrier would only have to convert two airplanes to exceed this threshold. Data collected by the FAA on Part 121 fleet size distribution indicated that there are 64 unscheduled carriers operating under Part 121 and that 26 of these carriers, or 40 percent, operate 2 or more airplanes. This is more than one-third of the small unscheduled operators subject to the rule. Consequently, the FAA has determined that this amendment may have a significant economic impact on a substantial number of small unscheduled operators, and a regulatory flexibility analysis is required under the terms of the RFA. The regulatory flexibility analysis for these unscheduled operators follows in Section V.

Those air carriers that have already retrofitted their fleet voluntarily would only incur costs as a result of the requirement to upgrade from 6 to 11 parameters. However, none of the carriers that the NTSB identified as having converted voluntarily are small carriers. Therefore, no small entities would be impacted by this requirement.

The Part 135 amendment requiring CVR's on certain turbine-powered aircraft would not have a significant economic impact on small entity commuter air carriers. The uniform annualized cost of the $10,100 investment to install a CVR on a newly-manufactured aircraft is $1,266. Adding the annual maintenance and fuel penalty costs of $590 yields a net annual compliance cost of $1,856. Commuter carriers are scheduled operators and therefore the threshold value of $52,546 applies. An operator would have to buy 29 new aircraft to exceed this threshold, far greater than the 9 aircraft defining a small entity. Therefore, no small entity commuter carriers will be affected by this amendment.

With respect to on-demand air taxis operating under Part 135, the FAA's Aviation Standards National Field Office in Oklahoma City lists approximately 4,000 operators registered as on-demand air taxis. The majority of these are small entities. However, data examined in the *FAA Statistical Handbook of Aviation* indicate that less than 20 percent of all air taxis operate turbine-powered aircraft. Therefore, the criteria for a "substantial number," one-third of the small entities affected, has not been exceeded.

For these reasons, the amendments adopted in this final rule are not expected to have a significant economic impact on a substantial number of small entities for all affected categories other than the small unscheduled Part 121 operators. However, a regulatory flexibility analysis is required under the terms of the RFA for the small unscheduled Part 121 operators.

V. Final Regulatory Flexibility Analysis

As required by Section 604 of the RFA, the following analysis deals with the amended Part 121 flight recorder requirements as they relate to small unscheduled operators.

A. Why Agency Action is Taken

The reasons for agency action are detailed in the final rule and the regulatory evaluation.

Briefly, the amendment upgrades flight recorder standards for airplanes receiving original type certificates before September 30, 1969, and operated under Part 121. The expected service life of a pre-1969 type certificated airplane has been prolonged far longer than anticipated at the time higher flight recorder standards were adopted for post-1969 airplanes. The advantages of the additional parameters of recorded information have been demonstrated by those airplanes so equipped, and it is desirable that more specific information be obtained following an accident than is possible under current regulations.

B. Objectives and Legal Basis for the Rule

The objective of the amendment is simply to make commercial air transportation safer. This objective has been thoroughly discussed in the final rule and the regulatory evaluation.

The legal bases of the proposal are Sections 313(a), 314(a), 601 through 610, and 1102 of the Federal Aviation Act of 1958, as amended (49 USC 1354 (a), 1421 through 1430 and 1502); 49 U.S.C. 106(g) (Revised, Pub. L. 97-449, January 12, 1983).

C. Description of Small Entities Affected by the Rule

The entities are unscheduled air carriers subject to Part 121 of the FAR with nine or fewer airplanes. This is covered in detail in Section IV above.

D. Compliance Requirements of the Rule

The amendment requires that pre-1969 type certificated airplanes operated under Part 121 be equipped with digital flight recorders within 2 years of the effective date of the rule and that these recorders be upgraded to record 11 parameters of information within 7 years of the effective date of the rule.

E. Overlap of the Rule with Other Federal Rules

There are no other Federal rules that duplicate, overlap, or conflict with the amended rule.

F. Comments in Response to the Initial Regulatory Flexibility Analysis

In NPRM No. 85-1, the FAA certified that the proposed rule was not expected to have a significant economic impact on a substantial number of small entities for all categories of operators which would be affected by the rule. Consequently, an Initial Regulatory Flexibility Analysis was not required and none was prepared. The revisions to the cost estimates in the final rule resulted in the determination that the amendment could result in a significant economic impact on a substantial number of small entities for only one category of operator, the small unscheduled Part 121 air carriers. However, as discussed below, this is the result of the relatively low threshold value for determining a significant economic impact applicable to unscheduled operators in comparison to scheduled operators of similar equipment, and therefore the small unscheduled Part 121 air carriers are not expected to be any more adversely affected than their scheduled counterparts.

The FAA's original regulatory flexibility determination remains the same for all other categories of small entities.

G. Alternatives to the Proposal

The small entity nonscheduled Part 121 operators should be included in the rule, rather than excluded, because they operate the same types of airplanes as those operated by scheduled Part 121 operators. Further, Part 121 operators engage in common, rather than private, carriage of persons and property. The standards should be the same for all operators of similar equipment that hold out to the public as a common air carrier, regardless of whether their operations are scheduled or not. Finally, because unscheduled carriers operate the same types of airplanes as scheduled carriers, their operating costs are very similar for the same scale of operations. The $3,666 threshold value defining a significant economic impact for unscheduled operators is substantially lower than the $52,546 and $94,094 thresholds applicable to scheduled carriers. However, this is because the vast majority of unscheduled operators are air taxis that operate under Part 135 with much smaller and less costly piston-powered airplanes. Although small entity unscheduled Part 121 operators will exceed their low threshold value if they convert two or more airplanes, they should be no more adversely affected than the scheduled small entity Part 121 operators because their costs are much more comparable to those of scheduled Part 121 operators than to those of unscheduled Part 135 operators.

CONCLUSION

For the reasons discussed in the preamble and based upon the findings in the Regulatory Evaluation, Regulatory Flexibility Determination, and Trade Impact Assessment located in the docket, the FAA has determined that this document: (1) Involves an amended regulation that is not major under Executive Order 12291; and (2) is a significant rule pursuant to the Department of Transportation Regulatory Policies and Procedures (44 FR 11034; February 26, 1979). In addition, it is certified under the criteria of the Regulatory Flexibility Act that this rule will not have a significant economic impact on a substantial number of small entities for all the affected categories of small entities other than the small, unscheduled Part 121 operators. A final Regulatory Flexibility Analysis has been prepared in accordance with Sections 604(a) and (b) of the Regulatory Flexibility Act for this category. A copy of the evaluation may be obtained by contacting the person identified in the "FOR FURTHER INFORMATION CONTACT" paragraph.

ADOPTION OF THE AMENDMENTS

Accordingly, Parts 91, 121, 125, and 135 (14 CFR Parts 91, 121, 125, and 135) are amended effective May 26, 1987.

The authority citation for Part 135 is revised to read as set forth below, and the authority citations following all sections in Part 135 are removed:

Authority: 49 U.S.C. 1354(a), 1421 through 1431, and 1502; 49 U.S.C. 106 (g) (Revised Pub. L. 97-449, January 12, 1983).

Amendment 135-24

Foreign Air Carriers and Operators of Certain Large U.S.-Registered Airplanes

Adopted: May 19, 1987 **Effective: August 25, 1987**

(Published in 52 FR 20026, May 28, 1987)

SUMMARY: These amendments require that U.S.-registered aircraft leased by foreign persons be maintained in accordance with acceptable maintenance standards and clarify certain rules to preclude the commingling of noncommon (private) and common-carriage operations. These amendments are necessary to upgrade certain regulations regarding the leasing of U.S.-registered aircraft by foreign persons and to clarify the inspection and maintenance requirements applicable to foreign persons conducting private and common-carriage operations with U.S.-registered airplanes.

FOR FURTHER INFORMATION CONTACT: Messrs. David L. Catey, Manager, Project Development Branch (AFS-240), Air Transportation Division, telephone (202) 267-3747, or Bob Baker, Manager, Project Development Branch (AFS-360), Aircraft Maintenance Division, telephone (202) 267-3788, Office of Flight Standards, Federal Aviation Administration, 800 Independence Avenue, SW., Washington, D.C. 20591.

SUPPLEMENTARY INFORMATION:

Background

On October 9, 1980, Part 125 of the Federal Aviation Regulations (FAR) was published in the *Federal Register* (45 FR 67214). With certain exceptions, not germane to the current discussion, Part 125 up to now has applied to the operation of all U.S.-registered airplanes having a passenger seating configuration of 20 or more, or a maximum payload capacity of 6,000 pounds or more, unless they are required to be operated under the rules of Part 121, 135, or 137 of the regulations.

Although Part 125 was not intended to provide acceptable safety levels for common-carriage operations, the inspection programs and maintenance requirements of § 125.247 currently apply to U.S.-registered airplanes operated outside the United States by foreign persons. This results because Part 125 governs operation of a U.S.-registered airplane of the prescribed size unless that operation is required to be conducted under the rules of Parts 121, 135, or 137. Accordingly, up to now there has been no exclusion from Part 125 for operators under Part 129—Operations of Foreign Air Carriers.

At the time Part 125 was published, the FAA was considering rulemaking to revise Part 129 to cover inspection and maintenance requirements for U.S.-registered aircraft. Requiring foreign air carriers to comply with Part 125 immediately was deemed inappropriate in light of the possibility of change to Part 129. Consequently, in adopting Part 125, the agency established a deferred compliance date of January 1, 1983, for foreign air carriers. By Amendments 125-4 (47 FR 44718; October 12, 1982), 125-5 (49 FR 34815; Sepember 4, 1984), 125-6 (51 FR 873; January 8, 1986), and 125-7 (52 FR 6956; March 6, 1987), the agency extended the January 1, 1983, compliance date to September 1, 1984, February 28, 1986, February 28, 1987, and February 29, 1988, respectively, to provide sufficient time for completion of this rulemaking.

Subsequent to the adoption of Part 125, the agency has carefully monitored the operating experience of large U.S.-registered airplanes operated under Part 125. The operating experience can be divided into two main areas of interest. First, the frequency with which foreign air carriers operate U.S.-registered airplanes under lease has shown a marked increase. These lease agreements are desirable since they provide a means for U.S. air carriers to arrange for use of these airplanes during periods of reduced traffic levels. The second area concerns the distinction between common carriage and noncommon carriage operations.

Most foreign air carriers and foreign persons engaged in common-carriage operations have aircraft maintenance program requirements adopted by their domestic governments which are consistent with the international standards in Part I of Annex 6 to the Convention on International Civil Aviation Organization (ICAO). ICAO, Annex 6, requires each operator to comply with the terms of the aircraft's certificate of airworthiness and to maintain the aircraft in an airworthy condition. To meet these requirements, each foreign operator of a U.S.-registered aircraft used in common carriage must ensure that the aircraft is maintained by a qualified organization with a well-trained staff and adequate workshops, equipment, and facilities. That organization must also have appropriate maintenance manuals, records, and procedures regarding training, inspection, and release of the aircraft. However, some countries may not have requirements completely consistent with the ICAO aircraft maintenance program requirements. This means that U.S.-registered airplanes operated by foreign air carriers or persons from those countries might not meet those international standards. To allow operation of these aircraft would be inconsistent with U.S. international obligations for aircraft of its registry. These amendments will therefore require compliance with the United States' international airworthiness obligations.

Concerning the second main aspect of the operating experience of large U.S.-registered airplanes of the size covered by Part 125, that part was designed to provide a regulatory scheme for an appropriate level of safety for airplanes not used in common carriage. This regulatory intent is stated explicitly in § 125.11. That section prohibits common carriage by a Part 125 certificate holder and declares that any person holding an air carrier operating certificate is ineligible for a certificate under Part 125. The sole exception to the principle that Part 125 is intended to apply only to noncommon carriage to date has been the case of a foreign person common carrier compelled to operate under the rules of Part 125 by operating a U.S.-registered airplane of the size covered by that part. These amendments eliminate that exception by expanding Part 129 to apply to each foreign operator of a U.S.-registered aircraft engaged in common carriage operating either into and out of or wholly outside the United States.

On December 10, 1985, the FAA published Notice No. 85-24 (50 FR 50588, December 10, 1985) to resolve the issues discussed above. The public comment period closed on April 10, 1986.

Analysis of Comments

Seven public commenters responded to Notice No. 85-24. Two commenters supported the proposals to preclude the commingling of noncommon (private) and common-carrer operations. No comments were received with respect to the operational as opposed to the airworthiness and maintenance proposals of Notice No. 85-24. Thus, to preclude the commingling of noncommon (private) and common-carriage operations, new §§ 121.3(i), 125.11(c), 129.1(b), 129.11(a)(4) and (c), 135.11(c), and a new paragraph 5 of Section V. A., of paragraph (b) of Appendix A of Part 129 are adopted as proposed. Also, the proposals to revise §§ 125.1(a) and (b)(1), (3), and (4), 129.1(a) and 129.11(a) are adopted as proposed.

Section 125.1(d) is removed because the cutoff date of January 1, 1983, is obsolete, and the reference to paragraph (d) is also removed from § 125.1(a).

Proposed § 125.11(a) is revised by replacing the words "is authorized to operate aircraft under an operating certificate or operations specifications" with the words "holds the appropriate operating certificate and/or operations specifications necessary to conduct operations." This revision is consistent with terminology used in SFAR 38-2. Proposed § 125.11(a) is adopted with this modification.

Several commenters recommend that proposed § 129.14(b) be revised to require a maintenance program that would be equivalent to the continuous maintenance program required for Part 121 air carriers. It was suggested that a more specific reference is needed to address the significant maintenance aspects of Part 121 which would clearly exclude an obligation for the foreign air carrier to follow other certification requirements of Part 121 or 135. To the same general effect is the suggestion of another commenter who proposes a change to language in proposed § 129.14(b) to require that the program selected meet the requirements consistent with § 121.367 or 135.425 as appropriate. The FAA does not agree with these suggestions. A primary objective of the amendment is to require that a U.S.-registered aircraft leased by a foreign person be maintained in accordance with maintenance standards that are consistent with the requirement of the country which is a member of the Internationl Civil Aviation Organiztion. The FAA considers it would be inappropriate to specify all the applicable FAR sections or to limit an operator's maintenance program requirements to those two sections because an acceptable maintenance program must be in compliance with numerous other sections of Parts 121 and 135, as appropriate.

Another commenter questions who would be responsible for airworthiness control when a foreign operator under Part 129 operates a U.S-registered aircraft. Proposed § 129.14(a) and (b) would require each foreign person who operates a U.S.-registered aircraft in common carriage to meet prescribed maintenance requirements. Aircraft maintenance programs which are consistent with the international standards in Part I of ICAO Annex 6 require each operator to comply with the terms of the aircraft's certificate of airworthiness and to maintain the aircraft in an airworthy condition. The Federal Aviation Regulations prescribe airworthiness standards for all U.S.-registered aircraft operating within or outside the United States, irrespective of the person operating the aircraft. This includes U.S.-registered aircraft operated by a foreign air carrier or foreign person.

The FAA has further reviewed the maintenance requirements proposed in § 129.14(b) and the comments received concerning the proposed wording of that paragraph. As written, the proposal creates a misunderstanding as to what would constitute an acceptable maintenance program as required by proposed 129.14(a). In addition, proposed § 129.14(b) would have provided that U.S.-registered aircraft operated by foreign persons would be adequatley maintained in accordance with either Part 121 or Part 135, without regard to or consideration of the maintenance standards that are consistent with the requirement of the country which is a member of the ICAO. Further, specific requirements of a maintenance program would best be identified in an Advisory Circular which could address specific requirements for a particular type of operation. Based on the foregoing, § 129.14 has been revised to impose a general requirement that U.S.-registered aircraft operated in common carriage by any foreign air carrier or any foreign person be maintained in accordance with a maintenance program which has been approved by the FAA Administrator. The specific requirements of the program will be addressed in an Advisory Circular that will provide guidance as to what would constitute an approved maintenance program. The Advisory Circular will be disseminated to FAA International Field Offices and Flight Standards District Offices.

Two commenters recommend that the maintenance rules of Part 43 be revised to include reference to Part 129. The FAA agrees and has adopted this recommendation by amending § 43.13(c).

Regulatory Evaluation

These amendments clarify the maintenance and minimum equipment list requirements applicable to U.S.-registered aircraft operated by foreign persons. Section 129.11 (a)(4) will impose only a minimal cost by requiring that the registration markings of each U.S.-registered aircraft be listed on the foreign carrier's Part 129 operations specifications.

Two commenters support the proposed sections that would preclude the comingling of noncommon (private) and common-carriage operations, and no opposing comments were received. A minimal cost may result from the adoption of these amendments. A remote possibility exists that one or several transport category aircraft may be currently listed on both a Part 125 (private-carriage) operations specifications and either a Part 121, Part 129 or Part 135 (common carriage) operations specifications. Although such simultaneous listing of an aircraft on both private- and common-carriage operations specifications is contrary to current FAA administrative practices, a minimal cost may be incurred by the FAA and a few aircraft operators to delist an aircraft from either the private-carriage operations specifications or the common-carriage operations specifications. In addition, the few operators who may be using the same aircraft in private- and common-carriage operations under a simultaneous listing may lose some utilization of their aircraft as a result of this rule. Any costs that would be incurred are expected to be very minor, however, because of the very limited extent of this practice.

New § 129.14(b) provides for the use of a minimum equipment list by a foreign air carrier or foreign person using any U.S.-registered aircraft in common-carriage operations. The provisions of § 129.14(b) are more explicit and appropriate to common-carriage operations than the minimum equipment list requirements provided in § 91.30, which were reinstated effective March 13, 1986 (50 FR 51188, December 13, 1985), in Amendment 91-192. Both Amendment 91-192 and these amendments preclude the necessity for exemptions, thereby reducing the administrative burden of both foreign air carriers and the FAA.

Conclusion

These amendments will facilitate the agency's maintaining distinctions among Parts 91, 121, 125, 129, and 135 of the regulations so that all U.S.-registered aircraft meet appropriate standards applicable to the type of operations (air transportation versus other air commerce) being conducted. They also provide for minimum equipment list use by foreign air carriers and other foreign persons using any U.S.-registered aircraft in common carriage operations without the necessity of obtaining an exemption. These amendments will have either no impact or a small positive impact on trade opportunities of U.S. and foreign persons who may wish to enter into aircraft lease agreements. Accordingly, for these reasons and those discussed under the heading entitled "Regulatory Evaluation," the FAA has determined that these amendments are not considered to be significant under DOT Regulatory Policies and Procedures (44 CFR Part 11034; February 26, 1979) and are not major as defined in Executive Order 12291. For these reasons and because these amendments will result in negligible costs, I certify that, under the criteria of the Regulatory Flexibility Act, the amendments will not have a significant economic impact on a substantial number of small entities. The overall economic impact of this rulemaking is so minimal that it does not require a full regulatory evaluation. In addition, benefits to this agency and some foreign operators are expected to accrue from the elimination of the need for certain exemptions.

Adoption of the Amendments

In consideration of the foregoing, Parts 43, 91, 121, 125, 129, and 135 of the FAR (14 CFR Parts 43, 91, 121, 129, and 135) are amended effective August 25, 1987.

The authority citation for Part 135 continues to read as follows:

Authority: 49 U.S.C. 1354(a), 1355(a), 1421 through 1431, and 1502; 49 U.S.C. 106(g) (Revised, Pub. L. 97-449, January 12, 1983).

Amendment 135-25
Smoking Aboard Aircraft

Adopted: April 11, 1988 **Effective: April 23, 1988**

(Published in 53 FR 12358, April 13, 1988)

SUMMARY: This rule requires the no smoking sign to be turned on at all times on scheduled airline flights, except for flights between the United States and other countries, which are scheduled to be 2 hours or less in duration. This rule carries out a ban on smoking on such flights mandated by Pub. L. 100-202. The rule also makes minor changes in other, related sections of Parts 121 and 135 which affect smoking aboard air carrier aircraft during flights not covered by a total ban. Smoking in lavatories is prohibited on all air carrier flights. By December 31, 1988, aircraft lavatories must have placards which notify passengers that tampering with smoke detectors is prohibited by Federal law. Finally, the required passenger briefing must include more detailed instructions on smoking, including all these changes and the new statutory ban on tampering with smoke alarms in aircraft lavatories.

DATES: Effective Date: April 23, 1988
Comments By: May 31, 1988

ADDRESSES: Send comments on the rule in duplicate to: Federal Aviation Administration, Office of the Chief Counsel, Attention: Rules Docket (AGC-204), Docket No. 25590, 800 Independence Avenue, SW, Washington, DC 20591. One may deliver comments in duplicate to FAA Rules Docket, Room 915G, 800 Independence Avenue, SW, Washington, DC. All comments must be marked "Docket No. 25590." Comments may be examined in the Rules Docket weekdays, except Federal holidays, between 8:30 a.m. and 5 p.m.

FOR FURTHER INFORMATION CONTACT: John Craig Weller, Operations Law Branch (AGC-220), Regulations and Enforcement Division, Office of the Chief Counsel, Federal Aviation Administration, 800 Independence Avenue, SW, Washington, DC 20591, Telephone (202) 267-8756; Gary E. Davis, Project Development Branch (AFS-240), Air Transportation Division, Office of Flight Standards, Federal Aviation Administration, 800 Independence Avenue, SW, Washington, DC 20591, Telephone (202) 267-8094.

SUPPLEMENTAL INFORMATION:

Comments Invited

Interested persons are invited to participate in this rulemaking by submitting written data, views, or arguments and by commenting on the possible environmental, energy, federalism, or economic impact of this proposal. The comment should identify the regulatory docket or amendment number and be submitted in duplicate to the address above. All comments received, as well as a report summarizing any substantive contact with FAA personnel on this rulemaking, will be filed in the docket. The docket is available for public inspection both before and after the closing date for making comments.

The Administrator will consider any comment made on or before the closing date for comments. This final rule may be amended in light of comments received.

The FAA will acknowledge receipt of a comment if the commenter submits with the comment a pre-addressed, stamped postcard on which the following statement is made: "Comment to Docket No. 25590." When the comment is received, the postcard will be dated, time stamped, and returned to the commenter.

Availability of Final Rule

Any person may obtain a copy of this final rule by submitting a request to the Federal Aviation Administration, Office of Public Affairs, Attention: Public Inquiry Center (APA-430), 800 Independence Avenue, SW, Washington, DC 20591, or by calling (202) 267-3484. Requests should be identified by the docket number of this rule. Persons interested in being placed on a mailing list for future rulemaking actions should also request a copy of Advisory Circular 11-2A, Notice of Proposed Rulemaking Distribution System, which describes the application procedure.

Background

Smoking aboard air carrier aircraft has been regulated for some time for reasons of consumer protection, passenger comfort, and safety. Regulation of smoking for consumer protection and passenger comfort reasons has been based on the consumer protection provisions of section 404 of the Federal Aviation Act (Act) which requires air carriers to provide safe and adequate service. Section 404 is contained in Title IV of the Act, which regulates the economic and consumer protection aspects of air transportation. The first such rules concerning smoking aboard air carrier aircraft were adopted by the Civil Aeronautics Board (CAB) in 1973 (ER-800, 38 FR 12207, May 10, 1973). Those rules required certificated air carriers to set aside nonsmoking seats on each of their flights and to offer nonsmoking seats, if available, to passengers. Subsequently, the CAB amended its smoking rules to require that all passengers who requested a nonsmoking seat be given one (as long as the passenger complied with the carrier's usual check-in requirements), even if that meant the nonsmoking section had to be expanded (ER-1245, 46 FR 45934, September 16, 1981).

In 1984, the CAB reexamined its smoking rules. It considered requiring a ban on smoking on all air carrier flights of 2 hours duration or less, but eventually decided not to adopt such a ban. It did, however, ban smoking entirely on air carrier aircraft with fewer than 30 passenger seats (except for on-demand air taxi operations) because of the less-effective cabin ventilation systems on these aircraft and because flights in these aircraft were typically of short duration. The CAB reasoned that the short duration of the flight would ensure that any burden on smokers was minimized, while providing nonsmokers with a smoke-free flight. At the same time, the CAB adopted a total ban on smoking while an aircraft was on the ground because it found that aircraft ventilation systems typically are less effective there (ER-1383, 49 FR 25408, June 20, 1984).

When the CAB ceased to exist at the end of 1984 because of airline economic deregulation, the remaining economic regulatory functions were transferred to the Office of the Secretary of Transportation (OST). The consumer protection and passenger comfort rules on smoking aboard air carrier aircraft continue to be administered by OST (14 CFR Part 252).

While OST regulates air carrier economic and consumer issues under Title IV of the Act, the Federal Aviation Administration (FAA) regulates the safety aspects of air carrier operations under the authority of Title VI of the Act. FAA rules for the operation of air carrier airplanes with more than 30 seats are contained in Part 121 of the Federal Aviation Regulations (FAR) (14 CFR Part 121). Rules for the operation of air carrier aircraft with 30 seats or less are contained in Part 135 of the FAR (14 CFR Part 135). Some additional certification rules for all air carriers are contained in Special Federal Aviation Regulation (SFAR) 38-2.

Currently, there are few FAA rules which regulate smoking on air carrier aircraft for safety reasons. Section 121.317 of the FAR requires that each airplane be equipped with no smoking signs that must be turned on for each takeoff and landing, and at any other time deemed necessary by the pilot in command. No one may smoke when these signs are turned on. As a matter of practice, most carriers turn these signs on before passenger boarding and usually leave them on until after takeoff, turn them on again when the airplane is on final approach for landing, and then leave them on until the passengers have deplaned. Section 121.571(a)(1) of the FAR also requires that passengers be briefed on smoking before takeoff.

Section 135.177(a)(3) requires that aircraft having more than 19 passenger seats be equipped with no smoking signs which must be turned on for each landing and takeoff, and any other time considered necessary by the pilot in command. There is no requirement that smaller aircraft have no smoking signs. However, § 135.117(a)(1) requires that passengers on all aircraft operated under Part 135 of the FAR be given a briefing on smoking before takeoff.

New Legislative Requirement

In December 1987, Congress enacted a number of changes to the Act. One of the actions was an amendment to section 404 of the Act which mandates a total ban on smoking "in the passenger cabin or lavatory on any scheduled airline flight in intrastate, interstate, or overseas air transportation, if such flight is scheduled for 2 hours or less in duration." (Section 404(d)(1)(A)) This ban takes effect on April 23, 1988, and lasts for a period of 2 years. Section 404(d)(1)(B) directs the Secretary of Transportation to issue any regulations necessary to carry out the ban.

At the same time, Congress also added section 404(d)(2) which provides for a civil penalty of up to $2,000 for any passenger who tampers with, disables, or destroys a smoke detector in the lavatory of an air carrier aircraft. This provision took effect immediately and has no expiration date.

Currently, smoke detectors installed in aircraft lavatories are not required to be resistant to tampering. However, such a requirement might prevent or discourage attempts to tamper with or disable lavatory smoke detectors. The FAA solicits comments on whether it should consider such a requirement and on the associated costs and benefits.

As already mentioned, the current consumer protection rules regulating smoking on air carrier aircraft are contained in Part 252 of the economic regulations administered by OST. These rules were adopted under the "safe and adequate service" provisions of section 404 of the Act. The new smoking ban adopted by Congress is also contained in section 404 of the Act. The Secretary of Transportation has decided that rules to carry out the new, congressionally-mandated ban on smoking aboard flights of 2 hours or less should be administered by the FAA instead of OST. This decision is based on the fact that the passenger information signs aboard aircraft, which tell passengers when they may not smoke, are required by the safety rules in the FAR. The times when these signs must be turned on are also prescribed by the FAR. Ensuring compliance with the signs is also the responsibility of the FAA. Since passengers are accustomed to these signs and to complying with them, it is logical to use them to notify passengers that smoking is prohibited on a particular flight. In addition, because the signs are already in place on most air carrier aircraft, using them to notify passengers of the smoking ban will entail no additional cost for the airlines. For aircraft which are not required to have signs, the safety briefing already required by the FAR can be used to inform passengers when the 2-hour ban will be in effect. Therefore, the Secretary has delegated the authority under section 404(d) of the Act, as amended by section 328(a) of the Department of Transportation and Related Agencies Appropriations Act of 1988, Pub. L. 100-202, to the Administrator of the FAA. (Amendment 1-223, 53 FR 10250, March 30, 1988).

DISCUSSION OF THE RULE

"Scheduled Flights"

Neither Part 121 nor Part 135 contains a definition of "scheduled flight." The term "schedule operation" is defined in SFAR 38-2 (50 FR 23944, June 7, 1985) as:

> Operations that are conducted in accordance with a published schedule for passenger operations which includes dates or times (or both) that is openly advertised or otherwise made readily available to the general public.

The FAA has determined that this definition of "schedule operation" should not be used to determine which flights operated by an air carrier should be included in the 2-hour smoking ban. Since the adoption of this definition in 1985, there have been complaints to the FAA and OST that it is too broad and includes flights which are legitimate "charter" flights. Many such flights are advertised in newspapers, flyers, and compilations of schedules with only dates of operation and cities served, without specific departure and arrival times or flight numbers. Passengers who reserve seats on these flights are usually only given specific departure and arrival times shortly before the actual date of departure. The FAA has concluded that it would be impractical to apply the 2-hour smoking ban to these flights, and it also concludes that Congress did not intend for them to be included.

The Official Airline Guide (OAG) is widely regarded as an authoritative source of information on scheduled airline flights throughout the world. The FAA has determined that the North American Edition of this publication should be used to determine which flights are included in the 2-hour smoking ban. At present, the operations of all air carriers offering scheduled flights are listed in the OAG. While it is conceivable that a carrier might remove its flights from the OAG to escape the 2-hour ban, the FAA believes that competitive and marketing pressures make such defections unlikely. The FAA invites comment on this conclusion.

Duration of Covered Flights

Pub. L. 100-202 bans smoking on a scheduled airline flight that is "scheduled for 2 hours or less in duration," except a flight between a point in the United States and a foreign country. The conference report on the legislation makes it clear that Congress intended that the ban apply to a flight which is scheduled for 2 hours or less, regardless of the actual duration of the flight. Scheduled duration of a flight will be determined by the elapsed time shown in the current North American Edition of the OAG. The FAA has decided that the OAG should be used as the reference for scheduled time, instead of airline computer reservation systems (CRS) because of the much wider availability of the OAG. CRS are not directly available to the public; information they contain usually may be obtained only through an airline or a travel agency. The OAG is available at airline offices and ticket counters, and at travel agencies, but it is also available in many libraries and may be purchased from the publisher. The schedule information contained in the OAG is nearly identical to that in airline CRS, although it is not updated quite so frequently because of publishing schedules. Nevertheless, its wider availability makes it a better reference source for determining the duration of a flight and whether the flight is covered by the smoking ban. It will be readily available to passengers who want to determine if smoking will be prohibited on a particular flight and to FAA inspectors who must verify compliance with the 2-hour ban.

For the purposes of the smoking ban, each segment of a multistop flight will be considered as a separate "flight." For example, a flight consisting of two segments—A to B with a duration of 90 minutes and B to C also with a duration of 90 minutes—would be considered two flights of less than 2 hours duration rather than one flight of 3 hours duration. Thus, smoking would be prohibited on both segments. On the other hand, on a flight consisting of two segments—A to B with a duration of 90 minutes and B to C with a duration of 3 hours—smoking would be banned only on the first segment.

Part 121

All airplanes used in operations under Part 121 of the FAR are currently required by § 121.317 to be equipped with passenger information signs which can be turned on and off by the crew. These signs tell passengers when to fasten their seat belts and when smoking is prohibited. Passengers are accustomed to these signs and to complying with their instructions. The no smoking signs are thus a good means for informing passengers when smoking is prohibited on a particular flight because it is of 2 hours duration or less. However, the FAA solicits comments on any problems this might cause and alternative means of carrying out the 2-hour ban on smoking. Section 121.317 currently requires that the no smoking sign (and the seat belt sign) be turned on for each landing and takeoff, and at any other time considered necessary by the pilot in command. This section is amended to include a new paragraph § 121.317(c)(1), which specifies that the no smoking sign must be turned on at all times during flight segments scheduled to last 2 hours or less, except for flights between the United States and a foreign point. Scheduled times will be determined by reference to the current OAG. Section 121.317(i) provides that this requirement will cease to be effective on April 24, 1990, since the statutory 2-hour ban expires on that date. New paragraph § 121.317(c)(2), which applies to all flights not included in the total ban on smoking, continues the current requirements for when the no smoking light must be turned on.

Currently, § 121.317(c) prohibits smoking whenever the no smoking light is turned on. This requirement is moved to a new paragraph § 121.317(g). This paragraph includes an exception which will allow the pilot in command to permit smoking in the cockpit even when the no smoking sign is lighted, except during landing and takeoff. An exception is necessary because the 2-hour ban applies only to the passenger cabin and lavatory. Smoking in the lavatory is prohibited at all times by new paragraph § 121.317(h). This added language clarifies the existing requirement that lavatories be equipped with placards prohibiting smoking and carries out the new statutory ban on smoking in lavatories.

In addition, new § 121.317(e) requires that each airplane lavatory have a sign or placard which reads: "Federal law provides for a penalty of up to $2,000 for tampering with the smoke detector installed in this lavatory." These notices, which must be in place by December 31, 1988, will help to notify passengers about the new civil penalty provision of the Act applicable to persons who tamper with lavatory smoke detectors. They will supplement the briefing that passengers receive on this provision of the Act.

The existing provisions of § 121.317 are rearranged and some editorial changes are made for clarity. An obsolete compliance date is removed.

Section 121.571(a)(1)(i) is revised to expand the required passenger briefing on smoking. The briefing must include the pertinent requirements of the FAR and of Part 252 of the economic regulations.

Most carriers now include the applicable requirements of both in their briefings. The required briefing must also include a specific statement advising passengers that the FAR require compliance with no smoking signs and placards, and that the Act bans tampering with smoke alarms in lavatories. Of course, carriers are free to include more information if they desire. For example, during the briefing on a flight segment of less than 2 hours, a carrier might choose to include information on smoking on a subsequent segment which is longer than 2 hours.

Part 135

In contrast to airplanes operated under Part 121, not all aircraft operated under Part 135 are required to have passenger information signs. Section 135.177(a)(3) requires such signs only on aircraft with more than 19 passenger seats. For those aircraft, a new § 135.127 is added with requirements similar to those in Part 121. No smoking signs will have to be turned on at all times on scheduled flight segments of 2 hours or less, as shown in the current OAG. As in Part 121, this provision will expire on April 24, 1990. For other flights, the current requirement in § 135.177(a)(3) that no smoking signs be turned on for takeoff and landing, and at any other time considered necessary by the pilot in command is moved to a new § 135.127(a)(2). New § 135.127(b) prohibits smoking while the no smoking sign is turned on, although it also includes an exception that allows smoking in the cockpit at the discretion of the pilot in command, provided the cockpit is physically separated from the passenger cabin. This means that the cockpit must be separated from the passenger cabin by a solid bulkhead, or a similar barrier, with a door that may be closed during flight. Smoking may only be permitted in the cockpit when this door is closed. Section 135.127(c) prohibits smoking in lavatories on aircraft and § 135.127(d) requires placards or signs like those required by § 121.317(e) to be installed by December 31, 1988, in aircraft lavatories equipped with smoke detectors.

Section 135.117(a)(1) concerning the required passenger briefing on smoking is amended to be substantially identical to the briefing requirement in Part 121. This briefing will serve to inform passengers on aircraft with 19 or fewer seats, which are not required to have passenger information signs, of the statutory smoking ban as well as carrier rules prohibiting smoking adopted under Part 252 of OST's rules. In fact, the new ban should have little impact on passengers on most scheduled flights operated under Part 135 because carriers, other than air taxi operators, are already required by § 252.3 of OST's economic regulations to prohibit smoking on aircraft with fewer than 30 passenger seats.

Compliance

Under the current smoking regulations administered by OST, air carriers (except for air taxi operators) are required to adopt and enforce various rules concerning smoking. Passengers are not subject to penalties for failure to comply with these carrier rules concerning smoking, although carriers are subject to civil penalties for failure to enforce their rules. In contrast, passengers who fail to observe the new 2-hour smoking ban may be subject to a civil penalty for smoking while the no smoking sign is lighted. Carriers will remain subject to the duty to enforce their rules on smoking imposed by Part 252 of OST's rules. In addition, the FAA also expects carriers to diligently enforce the prohibition on smoking when the no smoking light is turned on. If they do not, the FAA will consider further rulemaking on this issue. Of course, carriers remain free to adopt more stringent rules on smoking than prescribed by the FAR (or Part 252), including a total ban on all smoking on all flights. Alternatively, a carrier might choose to ban smoking on all flights in selected markets. Such a ban might help eliminate confusion in markets where some flights were scheduled for just under 2 hours in duration and others were scheduled to be slightly more than 2 hours in duration because of adverse wind conditions, for example.

Analysis of Benefits and Costs

The FAA has estimated the costs and benefits associated with this rule by analyzing it section-by-section.

This rule incorporates the provisions which carry out Pub. L. 100-202 into the FAR and, as such, is incorporated into the Code of Federal Regulations at 14 CFR Part 121 and Part 135. The FAA's responsibility in this regard has been to devise and promulgate a set of procedures to carry out the statutory mandate that bans smoking in the passenger cabin or lavatory on any scheduled airline flight in intrastate, interstate, or overseas air transportation, if such flight is scheduled for 2 hours or less in duration. The FAA is similarly responsible with regard to the Act's new civil penalty provision which is applicable to persons who tamper with lavatory smoke detectors. The rule also adopts, in other related sections of Parts 121 and 135, clarifying changes which embody current industry practice regarding smoking aboard air carrier aircraft during flights not covered by the total ban.

This rule provides a set of procedures to carry out the statutory mandate of Pub. L. 100-202, and incorporates changes that clarify current industry-wide requirements regarding smoking aboard aircraft. The costs of these procedures have been kept to a minimum, negligible amount because the FAA has employed a set of procedures that uses the duration of time the no smoking sign is lighted, the currently required safety briefing, and a simple sign or placard as the principal devices for carrying out the statutory mandate. The total cost of these requirements is negligible—the most expensive component cost being approximately one dollar to install a simple sign in a lavatory that has a smoke detector. The benefit of this rule is that the procedures give passengers an awareness of the provisions of the law regarding smoking aboard aircraft. Since passenger compliance with the law is contingent upon an awareness of the law, these procedures may be expected to increase passenger acceptance of constraints on smoking by providing timely and adequate information, thus reducing potential confusion and hostility which, in some cases, could have safety implications. This intangible benefit is not quantifiable in monetary terms.

Each change in Parts 121 and 135 is identified and explained in the detailed section-by-section analysis contained in the full Regulatory Evaluation placed in the Docket.

Regulatory Flexibility Determination

Since there is little or no cost associated with this rule, the FAA has determined that the rule will not have a significant economic impact on a substantial number of small entities.

Trade Impact Statement

Since this rule affects only U.S. air carriers which conduct scheduled flights of 2 hours or less in duration in intrastate, interstate, or overseas air transportation, and otherwise embodies current industry practice regarding smoking aboard aircraft, the FAA has determined that these regulations will not have an impact on international trade.

Need for Immediate Adoption

The majority of the changes made in this amendment merely carry out the prohibition on smoking on scheduled airline flights of 2 hours or less that was enacted by Congress. The change which prohibits smoking in lavatories on aircraft is partly in response to this same legislative action and in part is merely clarifying because lavatories are already placarded to prohibit smoking. The requirement for signs or placards in lavatories also carries out the new statutory ban on tampering with lavatory smoke detectors. Similarly, the expanded smoking briefing requirement is merely clarifying in nature, and largely reflects what is already the practice of most certificate holders.

Therefore, public comment on this amendment before its adoption is not likely to be helpful and could delay the effectiveness of the amendment past the effective date of the statutory ban on smoking. Such a delay is likely to cause confusion and would not be in the public interest. Comments received after the adoption of the amendment will be fully considered and any required changes in the rule will be made. For the same reasons, the FAA also finds good cause for making this amendment effective less than 30 days after publication.

CONCLUSION

The FAA has determined that this amendment is not major under Executive Order 12291 and that it is not significant under the Department of Transportation Regulatory Policies and Procedures (44 FR 11034, February 26, 1979). For the reasons discussed above, it also has been determined that the rule will not have a significant economic impact on a substantial number of small entities. A copy of the full Regulatory Evaluation is filed in the docket.

The regulation set forth in this amendment is being adopted pursuant to authority in the Federal Aviation Act of 1958, as amended (49 U.S.C. 1301, *et seq.*). That statute is construed to preempt State law regulating the same subject. Thus, in accordance with Executive Order 12612, it is determined that this amendment does not have federalism implications warranting the preparation of a Federalism Assessment.

THE RULE

Accordingly, the Federal Aviation Administration amends Parts 121 and 135 of the Federal Aviation Regulations (14 CFR Parts 121 and 135) effective April 23, 1988.

The authority citation for Part 135 is revised to read as follows:

Authority: 49 U.S.C. 1354(a), 1355(a), 1374(d), (as amended by Pub. L. 100-202), 1421 through 1431, and 1502; 49 U.S.C. 106(g) (Revised Pub. L. 97-449, January 12, 1983).

Amendment 135-26

Cockpit Voice Recorders (CVR) and Flight Recorders

Adopted: June 30, 1988 **Effective: October 11, 1988**

(Published in 53 FR 26134, July 11, 1988)

SUMMARY: The FAA amends its regulations to require digital flight data recorders and cockpit voice recorders (CVRs) to be installed in a broad category of airplanes and rotorcraft operated by air carriers and commuters, as well as in selected aircraft operated in general aviation. The amendments are in response to legislation which mandates the FAA to amend its flight recorder and CVR requirements in accordance with recommendations from the National Transportation Safety Board (NTSB). The intent of this rulemaking is to provide more information to accident investigators in determining the causes of accidents and the measures needed to correct the causes. In addition, the FAA also requests additional comments regarding the general aviation requirements.

DATES: *Effective date:* October 11, 1988.

Comments on the Part 91 requirements must be submitted on or before October 11, 1988.

Compliance Date: October 11, 1991.

ADDRESSES: Comments on the Part 91 requirements should be mailed in triplicate to: Federal Aviation Administration, Office of the Chief Counsel, Attention: Rules Docket (AGC-10), Docket No. 25530, 800 Independence Avenue, SW., Washington, DC 20591. Comments delivered must be marked Docket No. 25530. Comments may be examined in Room 915G weekdays between 8:30 a.m. and 5 p.m., except on Federal holidays.

FOR FURTHER INFORMATION CONTACT: Frank Rock, Technical Analysis Branch (AWS-120), Aircraft Engineering Division, Office of Airworthiness, Federal Aviation Administration, 800 Independence Avenue SW., Washington, DC 20591; Telephone (202) 267-9567.

SUPPLEMENTARY INFORMATION:

Background

The FAA issued a notice of proposed rulemaking on flight recorder and CVR requirements on February 12, 1988 (Notice No. 88-1, 53 FR 4314). The proposed rule was primarily based on recommendations from the NTSB issued on June 19, 1987. FAA rulemaking on these requirements was mandated by legislation on December 22, 1987, in the Appropriations Act, 1988, (Pub. L. 100-202) and on December 30, 1987, under the Airport and Airway Safety and Capacity Expansion Act of 1987, Title III, Section 303(c) (Pub. L. 100-223).

The Appropriations Act required the FAA to expand existing CVR and flight recorder requirements "to smaller sizes of commuter air carrier aircraft" and to require CVR and flight recorder "retrofits on certain types of existing commuter air carrier aircraft. . . ."

The Airport and Airway Safety and Capacity Expansion Act required the FAA to initiate rulemaking "to consider the use of cockpit voice recorders and flight data recorders on commuter aircraft and other aircraft, commensurate with the recommendations of the National Transportation Safety Board."

The NTSB issued its safety recommendations in response to a number of significant events which had occurred since its previous recommendations issued in August 1982. These events were FAA's flight recorder and CVR rule changes issued March 25, 1987; the technological development of solid-state flight data recorders (SFDR); the continued growth of the commuter air carrier industry; revisions to Part 23 of the Federal Aviation Regulations (FAR) (14 CFR Part 23) which defined a commuter category airplane and established certification requirements for commuter category airplanes; and the adoption by the International Civil Aviation Organization (ICAO) of revised flight recorder and CVR standards.

The FAA used the NTSB recommendations of June 19, 1987, as an appropriate background to discuss extending and updating its flight recorder and CVR rules. The rules on CVR and flight recorders had been last amended March 25, 1987 (Amendment Nos. 91-199, 121-191, 125-8, 135-23; 52 FR 9622). In simplified terms, the 1987 amendments required that FAR Part 121 operators update certain of their airplanes over a specified time period with digital flight recorders that have 6, 11, or 17 data parameters depending on the date of type certification or manufacture. Parts 91 and 125 were also amended by requiring that any operator who has installed approved flight recorders and approved CVRs shall keep the recorded information for at least 60 days after an accident or occurrence requiring immediate notification to the NTSB. The 1987 amendments extended Part 135 voice recorder requirements which applied to any turbojet airplane having a passenger seating configuration of 10 seats or more to any newly manufactured multiengine, turbine-powered airplane that was certificated to carry six or more passengers and required to have two pilots. The 1987 amendments did not require flight recorders for operations conducted under Part 135. They did not require voice recorders or flight recorders for operations conducted under Parts 91 and 125. They did not require flight recorders for helicopters.

The NTSB wanted broader application of the requirements than those established in the 1987 amendments, and the NTSB recommended that the requirements, including parameter requirements, be updated to cover technological improvements in CVR and flight recorder equipment. Through the aforementioned legislation, Congress agreed.

As stated in the preamble to the proposed rule and in the NTSB recommendations, the need for updated and expanded regulations on the installation and use of flight recorders and voice recorders is twofold. First, technological advances in cockpit equipment have greatly increased the potential for accumulating information on the flight characteristics of an aircraft at the time of an incident or accident. However, unless aircraft equipped with new electronic display systems (i.e., "glass cockpits") are also equipped with flight recorders that can capture the flight information and from which investigators can retrieve that information, the information is lost. Therefore, a major objective of this rulemaking is to upgrade the parameters and flight recorder and voice recorder standards to accommodate the most sophisticated systems now being installed in aircraft. Secondly, previous flight recorder and voice recorder requirements have not been applied to significant sectors of air transportation operations.

In recent years the commuter air carrier fleet has grown substantially and its growth is expected to continue. The 1987 annual report of the Regional Airline Association (whose membership consists primarily of commuter air carriers) estimates that more than 61 million passengers will be carried by members of that association in 1997. The growth in commuter air transportation has resulted in newly manufactured aircraft designed specifically for the commuter market. While these new airplanes have a take-off weight in excess of 12,500 pounds, they often have a seating configuration of less than 30 passenger seats and payloads of 7,500 pounds or less, which means they are operated under Part 135. Until now Part 135 has had no flight recorder requirements. Therefore, vital accident data from commuter airline accidents has not been available.

The NTSB safety recommendation cites several recent commuter air carrier accidents in which investigations revealed a lack of information that would have been pertinent to determining the causes. Although the investigations produced a number of safety recommendations based on evidence of potentially hazardous conditions and practices, the specific flight crew actions or inactions, environmental conditions or equipment failures that may have caused the accidents could not be positively determined. Therefore the NTSB's safety recommendations towards preventing recurrence could not be as definitive as possible. The NTSB has indicated that in these accidents if flight recorder information had been available, specific deficiencies in flight crewmembers performance or mechanical failures or malfunctions could have been determined. Without flight recorder information, accident investigators are severely limited in definitively assessing causes. Therefore, the FAA has added flight recorder requirements to Part 135 and extended the voice recorder requirements in Part 135 to specific types of airplanes and rotorcraft.

Part 91 and Part 125 operations have had neither flight nor voice recorder requirements. The lack of information poses the same problem to investigators as in commuter operations. Therefore, this rulemaking extends flight recorder and voice recorder requirements to specific types of airplanes and rotorcraft being operated under Part 91 and specific types of airplanes operated under Part 125.

In addition to the above, the NTSB recommended that all newly manufactured aircraft and new cockpit voice recorder installations be designed to allow for uninterrupted recording from boom or mask microphones and headphones for each flight crewmember station and from an area microphone on dedicated channels of the CVR. The performance of CVR installations of this kind where the audio signal of each crewmember station is continuously recorded on a dedicated channel provides much clearer recorded information for investigators than the standard cockpit area microphone (CAM). Therefore, this rulemaking includes amendments to Parts 23, 25, 121, 125, and 135, to require the NTSB recommended capability on newly manufactured aircraft and on aircraft on which new cockpit voice recorders are installed and to require the use of that capacity where it already exists.

In the interest of safety and in accordance with the Congressional mandate and NTSB recommendations, the FAA is extending and updating its regulations in flight recorders and voice recorders. This action is consistent with the requirements of § 601(b) of the FA Act that the FAA perform its powers and duties ". . .in such manner as will best tend to reduce or eliminate the possibility of, or recurrence of, accidents. . . ."

Overall this rulemaking accomplishes the following significant changes:

(1) It establishes flight recorder requirements for certain aircraft operated under Parts 91, 125, and 135.

(2) It establishes cockpit voice recorder requirements for certain aircraft operated under Parts 91 and 125, and extends and revises voice recorder requirements under Part 135.

(3) It upgrades the requirements and parameters for flight recorders to the level of the most sophisticated systems installed in aircraft. The new parameters and requirements affect certain aircraft operated under Parts 121, 125, and 135.

(4) It requires uninterrupted sound recording capability in cockpit voice recorders under Parts 23 and 25 and specifies use of this capacity under the operating rules of Parts 121, 125, and 135.

(5) It revises CVR and flight recorder airworthiness standards in Part 25; establishes flight recorder installation requirements in Parts 23, 27, and 29; and establishes CVR requirements in Parts 23 and 27.

COMMENT DISCUSSION

The FAA received 52 comments on the NPRM. Thirty-one comments opposed the proposed rule; nine supported it; two supported it with reservations.

The rest of the comments did not express opposition or support. At least 19 comments addressed specific issues raised by the proposed rule. The categories of commenters included airport authorities, state governments, operators of airplanes and helicopters, manufacturers, and foreign air transportation companies. Of the associations representing air transportation interest groups, comments were received from the Air Line Pilots Association (ALPA), the Air Transport Association (ATA), General Aviation Manufacturers Association (GAMA), Airport Operators Council International, the National Air Transportation Association (NATA), and the Regional Airlines Association (RAA). Commenters who opposed the rule were primarily operators conducting operations under Part 135 (or Part 91), particularly operators of helicopters, as well as ATA and NATA. Categories of commenters supporting the rule were manufacturers, state governments, and airport authorities, the National Transportation Safety Board (NTSB), and the RAA.

Several commenters presented recommendations and raised concerns over specific requirements in the rule. The following categories of issues were raised and are discussed separately below:

(1) Part 121 requirements

(2) Part 91 and Part 135 requirements

(3) Specific technical requirements

(4) Comments beyond the Scope of the Notice.

Part 121 Requirements

The Air Transport Association (ATA) on behalf of its member airlines submitted a number of objections to the proposed changes in Part 121 and in some cases to the proposed parallel changes in Part 25. Several of ATA's objections were also raised by other commenters. Overall opposition to the proposed changes was based on two general arguments. First, the ATA argued that the Congressional language cited in the NPRM as a primary basis for the proposed changes did not identify

Part 121 air carriers. Second, they argued that "the NTSB and FAA have not adequately justified the Part 121 proposals for further expansion of flight recorder requirements beyond those in Amendment 121-91." ATA also stated that the 45-day comment period was too short for its member airlines to "provide the type of technical and economic impact information needed to develop final credible technical and cost analyses," and recommended that the FAA withdraw and reconsider the proposed amendments to Parts 25 and 121.

ATA and others specifically commented on technical concerns with Part 121 proposals. Comments of a purely technical nature are dealt with elsewhere in this preamble. The remaining Part 121 comments (mostly from ATA) are summarized as follows:

- Of the six new developments cited by FAA in Notice 88-1 as justification for the proposed additional requirements, none justify the proposed Part 121 changes.
- Notice 88-1 did not include any discussion on "major rule", "significant rule" requirements under Executive Order 12291 and DOT policy, respectively.
- There are significant differences between the FAA/NTSB proposed flight recorder parameters and the ICAO standards which ATA says are "recommended standards only" which are "in the process of being revised."
- Adoption of 32 parameter flight recorder requirements for newly manufactured airplanes rather than last year's requirement for 17 parameter flight recorder for newly manufactured airplanes will create an unnecessary administrative and logistics burden.
- The proposed additional parameters could exceed the capacity of digital flight data acquisition units "denying airline use of flight recorder information for routine maintenance and operations analyses, some of which are required by the FAA."
- The relationship of the proposed requirements to the rules adopted in Amendment 121-191 is confusing and potentially disruptive and costly to airline operations especially when considered with other FAA requirements already adopted or under consideration (e.g. windshear, TCAS requirements). Related to this ATA comment was a comment by McDonnell Douglas Aircraft Co., which indicated that changing "regulatory requirements on systems such as flight recorders on an annual basis . . . makes planning very difficult and expensive."

ATA offered an alternative to the FAA proposal. ATA suggests that for a retrofit, additional parameters be required only when the airplane is already equipped with "an ARINC 717 digital flight data acquisition unit (DFDAU) with the ARINC buses containing the (a number to be later determined) additional parameters *already* converted to it." For newly manufactured airplanes ATA would follow the same pattern except that additional parameters above the 17 parameters of Amendment 121-191 would be recorded "on a space availability basis without impacting existing airline recording programs. . . ."

The FAA's Response:

The FAA does not agree with ATA's interpretation of the Congressional mandate. Given the overall legislative history of Public Law 100-223, FAA believes that the Congressional intent is to ensure safety by making available to the NTSB whatever data is necessary for accident investigation if acquiring that data is technologically feasible. Congress stated this intent by ordering the FAA "to initiate a rulemaking proceeding to consider the use of cockpit voice recorders and flight data recorders on commuter aircraft *and other aircraft, commensurate with the recommendations of the National Transportation Safety Board.*" (Emphasis supplied.) In its June 19, 1987, letter to the FAA, the NTSB stated its requirements which covered 14 CFR Parts 23, 25, 91, 121, and 135. FAA proposed to meet those requirements in Notice 88-1, as directed by Congress. Comments submitted by the Board did not indicate that the proposed Part 121 requirements exceeded the bounds of what the Board determines as necessary information for conducting accurate accident investigations.

ATA is correct that the normal paragraph addressing "major rule" under Executive Order 12291 and "significant rule" under DOT policy was omitted - inadvertently - from the NPRM. Nonetheless, the potential costs were fully discussed in the preamble (and in a full economic evaluation in the docket) and the substance of that discussion indicated that the proposed rule would not be considered major under the Executive Order. Further, the overall preamble discussion made it clear that the proposals were significant within the meaning of the Department of Transportation's Regulatory Policies and Procedures.

The 1987 Amendments to Part 121 did not increase the parameters listed in Appendix B of that part. NTSB has stated in its recent recommendations that Appendix B should be updated to expand the parameters list and define new parameters, improved accuracies, ranges, and sampling intervals so that flight recorder standards are consistent with the capabilities of the most advanced electronic display systems. As stated by NTSB, "The introduction of the Airbus A320 with its fly-by-wire technology will present new challenges in accident investigation that will require post accident information of the quantity and quality that goes far beyond the current minimum standards of Appendix B."

In response to the NTSB recommendations, this rulemaking updates the parameter list to meet the requirements of the most advanced cockpit systems if installed and to require the best available flight recorder technology for newly manufactured airplanes operated under Part 121. The requirement for flight recorder parameters in addition to the 17 required by the 1987 amendments applies only to aircraft manufactured after October 11, 1991, or those already equipped with specific ARINC equipment. This allows adequate time for the required installation of the latest flight recorder equipment as part of the manufacturing process which should cause no manufacturing delay and only minimal cost.

While ATA describes the proposed tie-in with existing ARINC 429 equipment (or an equivalent) as a retrofit requirement, it is not the normal mandatory type retrofit requirement applicable to all or certain specified airplanes operated under Part 121 or Part 135. The final rule clarifies the FAA intent in this regard (discussed under Technical Comments portion of this preamble) and as adopted the rule will apply only where stated equipment is already installed in an airplane and where data is readily available so that it can be accessed with virtually no burden on Part 121 operators, either in lost airplane time or other costs.

In consideration of other objections raised by ATA, that extending the parameters from 17 to 32 (or higher, by ATA's count) is too great a change too soon, that Part 121 operators are being required to make other equipment changes at the same time, and that the proposed parameters were not consistent with those recommended by ICAO, and in consideration of the comments submitted by the NTSB, the FAA has done the following: (1) extended the effective date of the requirements to 3 years instead of the proposed 2 years; and (2) reduced the number of mandatory parameters to 28 and made the other highly desired parameters optional where feasible.

Parts 91 and 135 Requirements

Except for the Regional Airline Association's agreement with most of the proposed Part 135 amendments, virtually all of the operators who commented on these requirements opposed them. Specific technical comments are discussed below. Typical of the more general opposing comments was the comment of the North Dakota Aviation Council which stated that the FAA had "expanded the intent of Congress" in proposing CVR and flight recorder requirements for certain general aviation operations under Part 91 and on-demand operations under Part 135. The National Air Transportation Association (NATA) also accused the FAA of expanding the Congressional mandate and further stated that nowhere in the proposal "can a case be made for a quantitative increase in safety benefit for requiring CVR's in the types of aircraft typically operated in the Part 135 charter fleet."

One commenter pointed out that a 2-year compliance period for the installation of CVR's is inadequate. From the commenter's viewpoint, most of the affected aircraft require a "heavy" inspection only every 5 to 6 years. It is during this inspection that it would be most appropriate to install the CVR.

Several commenters asserted that where an aircraft is newly manufactured to a type design of long standing, the attributes and operational history are already well known and it is unlikely that the NTSB will obtain the kind of information it seeks from accident investigations. These commenters also asserted that the past safety record did not justify the new requirements and that because of the nature of on-demand and general aviation operations the costs are disproportionate since they cannot be spread out over thousands of flight hours or hundreds of thousands of passengers boarded each year.

Some of the most vigorous comments adverse to the proposed requirements were received from helicopter operators. They, too, thought that the FAA had exceeded the Congressional mandate, that none of the cited accidents or other justification involved helicopters, and that the potential costs for helicopter operators far exceeded any potential benefits to the overall aviation industry.

The Regional Airlines Association stated that there is no justification for requiring retrofit of the 32-parameter flight data recorder on 20-30 seat airplanes under Part 135 when no such retrofit requirement was proposed for Part 121. RAA indicated that while the costs would be substantial, it could not provide specific estimates because they would vary from airplane to airplane depending on the amount of wiring already installed in the airplane.

The FAA's Response:

As discussed previously, the FAA does not agree that it has exceeded the Congressional mandate or that the new CVR and flight recorder requirements for Part 91 operators and for non-scheduled Part 135 operators cannot be justified. Accident investigators face the same problems in determining the causes of accidents, whether the accidents involve scheduled commuter operations, nonscheduled operations, or general aviation operations. New airplanes used in all of these operations employ state-of-the-art avionics and control systems; yet operators have not been required under Parts 91 and 135 to install flight recorders which would provide data to accident investigators. Post accident documentation, such as switch and instrument positions, that have proven vital in past investigations is not available with the new systems, thus increasing the difficulty in determining the cause of an accident.

Furthermore, many airplanes of the same type are used in Part 91 operations and in Part 135 operations. Therefore, any accident data collected from an accident of one of these airplane types has application for operations conducted under both parts. Also, an individual airplane may be used in operations conducted under both parts. If an airplane is used in operations under both parts, the Part 91 requirements would not be as burdensome as suggested by some commenters since in many cases the airplane would already be subject to Part 135 requirements. Also, because of the potential for use of an airplane type under both Parts 91 and 135, the used aircraft market ultimately benefits when airplanes are equipped so that they can move back and forth between different operating rules.

Accidents cited in the NPRM (which included operations conducted under Parts 91 and 135) illustrate the problems accident investigators encounter when aircraft are not equipped with flight or voice recorders. In such cases, investigators rely on interviews with fellow crewmembers, training records, FAA surveillance, cockpit standardization, and additional operational factors. Although the cause of an accident may be determined through these investigative efforts, the process may be long and costly in terms of lives and property. Time may be critical, particularly if the cause of an accident is an airworthiness factor.

The rule does recognize differences in accordance with the seating capacity of the aircraft. In Part 91, flight recorders are required for aircraft (both fixed-wing and rotorcraft) having a passenger seating configuration of 10 or more manufactured after October 11, 1991. The flight recorders must have 17 required parameters for airplanes and 22 for rotorcraft. In Part 135, flight recorders are required for aircraft (both fixed-wing and rotorcraft) having a passenger seating configuration of 10-19 seats that are brought onto the U.S. register after October 11, 1991. The flight recorders must have 17 parameters for airplanes and 22 for rotorcraft. In effect, Part 91 and Part 135 flight recorder requirements for these size aircraft apply only to newly manufactured aircraft. No retrofit of existing U.S. registered aircraft of this size is required for flight recorders.

In Part 135, airplanes having a passenger seating configuration of 20 to 30 seats and rotorcraft having a passenger seating configuration of 20 or more seats must be equipped with flight recorders after October 11, 1991. This is a retrofit as well as a requirement for newly manufactured aircraft. The NTSB in its comment agreed that it might be impractical to require 20-30 passenger airplanes to be retrofitted with 32 parameter flight data recorders, as proposed. In light of all the information received, the FAA has changed § 135.152(b) to require that affected aircraft be retrofitted with either 11-parameter or 17-parameter flight recorders (depending on the type certification date), except that those airplanes manufactured after October 11, 1991, must be upgraded to 28 parameters.

Clearly the flight recorder requirements for the larger aircraft being operated under Part 135 are more stringent than those for the smaller aircraft. Most, if not all, nonscheduled operations conducted under Part 135 use aircraft with a passenger seating configuration of less than 20 seats. Such aircraft are not required to be retrofitted with flight recorders. However, they are required to be equipped with voice recorders. Since the cost of installing voice recorders is substantially less than that of flight recorders, the FAA does not expect the voice recorder requirements to impose a significant burden on small operators.

With regard to comments about the inadequacy of a 2-year period to reasonably accomplish the Part 91 retrofit of CVR's, the FAA concurs. Accordingly, the FAA has provided a 3-year period to effect this retrofit. Recognizing, however, that some operators may not conduct a "heavy" inspection or overhaul in this period, the regulatory language provides that the Administrator, for good cause, may authorize extension of the compliance time to accommodate such maintenance schedules. A request for extension of the compliance time must be accompanied by a demonstration of good cause and must specify a date for the operator's completion of the retrofit of the CVR.

Technical Comments

A number of commenters provided detailed comments on the technical aspects of the new rules. Any such comments that address the substance of the rule are discussed below. Comments that point out printing errors, suggest non-substantive minor language changes, or suggest changes to make the rules internally consistent were considered and the appropriate changes were made. However those changes are not discussed in detail.

A number of commenters pointed out that, although the preamble to Notice 88-1 specifically discusses a new requirement for "hot mic" recording, the rule language specifies types of microphones but does not contain a "hot mic" requirement. Suggestions for appropriate rule language were provided. To correct this omission in the final rule, §§ 23.1457(c)(5) and 25.1457(c)(5) have been added to make it clear that all sounds received by the microphone must be recorded without interruption. In addition, §§ 121.359(e), 125.227(e), and 135.151(c) have been changed to clarify that §§ 23.1457(c)(5) and 25.1457(c)(5) apply to airplanes manufactured after October 11, 1991, and to airplanes on which a new cockpit voice recorder has been installed after October 11, 1991. One commenter stated that proposed § 25.1459(e) is unnecessary. This new paragraph requires evaluation of novel or unique design or operational characteristics of new aircraft to determine if additional parameters should be recorded on the flight recorder for that aircraft. The commenter is correct that additional parameters could be proposed as Special Conditions for that aircraft. However, the language is being inserted into § 25.1459 as a rule of general applicability so that as part of a review of airworthiness requirements for initial certification, a review to assess the need for additional parameters will be conducted.

A commenter pointed out that, while proposed § 91.35(b)(1) requires aircraft manufactured after one year after the effective date to be prewired to accept any appropriate flight recorder, the proposed language does not specify the date by which such aircraft must be equipped with flight recorders. The FAA has reviewed proposed 91.35(b)(1) and a parallel requirement proposed in § 135.152(a) and has concluded that, even though the requirement might provide an economic incentive to manufacturers to begin equipping airplanes to accept flight recorders, the safety benefit comes from the installation of the recorders. Therefore proposed §§ 91.35(b)(1) and 135.152(a) have not been included in the final rule.

One commenter questioned the justification for applying the proposed rules to helicopters. This commenter proposed that if CVR and flight recorder requirements are applied to any helicopters, they should be applied only to large helicopters. The FAA does not agree that the large/small dividing line (small = 12,500 pounds or less maximum certificated takeoff weight) is the appropriate determining factor for requiring or not requiring CVR and flight recorder equipment. As with airplanes, the FAA considers passenger seating configuration a more meaningful measure of the need for requiring safety information collection devices such as CVR and flight recorders.

A number of commenters stated that the language of proposed §§ 121.343(e) and 125.225(c) does not accomplish the objective stated in the preamble to Notice 88-1. Some commenters stated that the proposed rule language "equipped with an ARINC 429 digital data bus" is itself inaccurate. Others stated that even if an airplane does have the ARINC 429 equipment, that equipment may be used in such a way that it would not, without a major retrofit, provide access to the information in the additional parameters as suggested in the NPRM. The FAA's intent in following through on this NTSB recommendation was to take advantage of the full capability of more advanced technology equipment when that equipment is already installed. There is no intent to require any retrofitting costs beyond the minimal cost of accessing readily available data. The final rule has been redrafted so that it clearly carries out the original intent. It now states that when a large airplane is equipped with a digital data bus and ARINC digital flight data acquisition unit or equivalent the airplane must be "equipped with one or more approved flight recorders that utilize a digital method of recording and storing data and a method of readily retrieving that data from the storage medium." The rule, as adopted, also clarifies that only those parameters "available on the digital data bus" must be recorded.

As mentioned previously, the ATA and several other commenters questioned the number of new parameters that would be required under Appendix B to Part 121 for newly manufactured aircraft. Commenters suggested that there were inconsistencies between the FAA's proposed parameters, NTSB's recommended parameters, and ICAO recommended standards. Commenters also indicated that to meet the FAA proposed requirement would in many cases overload the system so that operators would have to sacrifice present usage of flight recorder systems to provide them with important safety-related, day-to-day operating information. At the same time some commenters suggested additional parameters, not proposed, that normally would be considered beyond the scope of this rulemaking. In order to establish standards that most effectively use flight recorder capability, the FAA has decided to require 28 mandatory parameters under Part 121, Appendix B, Part 125, Appendix D, and Part 135, Appendix D for newly manufactured aircraft. The remaining parameters will be optional, to be accessed if the operator's system has adequate capacity. The non-mandatory parameters include additional parameters that were not proposed, such as TCAS, which were added at the recommendation of the NTSB.

The NTSB and other commenters raised questions concerning the adequacy of existing Technical Standard Orders (TSOs) for both cockpit noise recorders and flight recorders. While TSOs are necessarily relevant, they have not been made a part of this rulemaking. As part of its ongoing TSO program, the FAA will revise TSOs when changes are needed to upgrade the specifications for equipment required by this final rule. These efforts are already underway and are being coordinated with the Society of Automotive Engineers (SAE) and European Organization for Civil Aviation Electronics (EUROCAE).

Some commenters pointed out that the minimum 15-minute duration period for cockpit voice recorders proposed for § 91.35(c) is not consistent with the standard agreed to in Europe (EUROCAE). Others noted that proposed §§ 91.35(b)(2) and 135.152(b) would allow a flight data recorder with an 8-hour duration while the international community is considering a 10-hour minimum to be consistent with the current ICAO recommended practice. While the FAA recognizes that both proposed limits are less stringent than those mentioned by commenters (and less stringent than FAA's own minimums under Part 121), the FAA's intent is to apply CVR and flight recorder solid state technology and CVR and flight recorder requirements to general aviation operations at minimal cost. Since the technology is already available, the FAA anticipates that reasonably priced CVR and flight recorder equipment for general aviation aircraft will be available for installation well within the 3-year compliance period allowed in this rule.

One commenter objected to the requirement in proposed Appendix E to Part 135 that a rotorcraft with over 20 passengers have flight recorders with a 24-hour recording capacity. The commenter stated that most rotorcraft operate essentially short-haul journeys and that, therefore, an 8 to 10-hour capacity should be adequate. The FAA agrees, but no change is needed since Appendix E does not require a 24-hour recording capacity. In Appendix E, the recorded time requirement is not related to the time of individual flights, but to a 24-hour clock.

Several commenters objected to the requirements in §§ 121.359(e), 125.227(e), and 135.151(c) that when operating aircraft equipped to record uninterrupted audio signals received by a boom or mask microphone, flight crewmembers must use the boom microphone below 18,000 feet. Specific objections were as follows:

(1) The requirement would make better sense elsewhere in Part 121 where it would clarify that the boom microphone rather than the handheld microphone should be used when cockpit workload is high.

(2) Flight crewmembers might not be able to determine whether the CVR in a particular aircraft has a "hot mic" feature.

(3) It requires the boom microphone even though the smoke/oxygen mask microphone might be more appropriate.

(4) It would have an impact on those aircraft which have a separate hand microphone for the public address/cabin interphone systems.

(5) Hot boom microphones are not needed since acceptable recordings are provided by directional fixed mikes and high quality area mikes.

(6) The requirement could affect flight safety by causing fatigue on flight schedules with successive short stops.

The FAA does not agree that area microphones provide recordings that are equal to boom microphones. Boom or mask microphones with uninterrupted signals produce the most audible recordings. The purpose of the requirement is to require boom microphones (or smoke/oxygen mask microphones if needed) at times when the continual recorded information would be most useful if an accident or incident occurred. Flight crewmembers should be able to tell whether CVR in a particular aircraft has a "hot mic" feature. The use of the boom microphone is not likely to be a cause of flight crewmember fatigue in short hop schedules. The causes of such fatigue are well documented—airport congestion, low altitude weather, the number of arrivals and takeoffs—factors which create a need for the use of hot mics. The requirement should not affect public address/cabin interphone communications which have a dedicated channel.

GAMA stated that except for the longitudinal acceleration and stabilizer trim position or pitch central position parameters, proposed Appendix D of Part 91 and Appendix B of Part 135 are consistent with Aerospace Standard AS 8039 which was produced by a Society of Automotive Engineers (SAE) committee formed at the suggestion of the FAA and other government agencies. The committee had concluded that the value of the potential information from the two excepted parameters would not justify the cost. GAMA also pointed out that the recommendation of the SAE committee had been unanimous except for the NTSB representative. The FAA has determined that these two parameters are justified, since the NTSB in its June 19, 1987, letter stated a need for the information that would be provided by these additional parameters.

One commenter objected to the requirement in § 91.35(d)(2) that the CVR be operating during the checklist action. The requirement would pose a problem for small aircraft that have no external source of power and that would have to rely on battery power to operate the CVR. The commenter stated that for some aircraft this would be impractical. The FAA does not agree that the requirement would be impractical. It is essential that checklist actions be recorded since in the event of an accident, investigators must determine if the checklist action was properly conducted. Determining the adequacy of the power source is a certification procedure and thus the manufacturer or operator would have to show during the certification process that CVR operation would not interfere with emergency or other power needs. This showing should not impose any significant additional burden since airplanes of the size to which this requirement applies would either operate off of an auxiliary power source or have adequate backup power available.

One commenter objected to the "Resolution Readout" column which was added to Appendix B—Airplane Flight Recorder Specifications. According to the commenter, these specifications increase resolution requirements beyond the capability of equipment currently being used. The commenter states that "Compliance with the higher orders of resolution will require more complicated software in the recorder system and in the readout equipment, effectively making all current equipment obsolete."

The resolution readout column is included to make the FAA flight recorder appendices consistent with the proposed ICAO recommended standard. However, the resolution readout requirement is intended only for flight recorder equipment installed on newly manufactured airplanes. The final rule has been changed to make this clear by including a footnote to this column in each flight recorder appendix. Also, the new TSO for flight recorder standards will contain resolution requirements.

Comments Beyond the Scope of the Notice

The FAA received several comments which were recommendations or suggestions for considering alternatives or additions to the proposal. Some of these were requests that are beyond the scope of the notice while others appeared to be primarily informational. These types of comments are summarized below and responded to.

Two commenters requested that the rulemaking update maintenance requirements to cover flight recorders and cockpit voice recorders. The FAA does not consider that a specific amendment is needed in this regard because an air carrier's continued airworthiness maintenance program will automatically cover such equipment.

One commenter requested that the cockpit voice recorder requirements under Parts 91 and 135 include a requirement for underwater locator beacons to aid retrieval of the recorders from lakes and rivers. This requirement already exists for aircraft certification requirements.

One commenter requested that the rule include relief for continued aircraft operation if a flight recorder or CVR becomes inoperative. The commenter was concerned that a time lapse may occur between the revisions to the Master Minimum Equipment List (MMEL) and the compliance date, also that MMEL lists may vary depending on who has responsibility for the particular aircraft MMEL. This rulemaking does not deal with minimum equipment lists and the problem suggested by the commenter, if necessary, would be handled under normal MMEL procedures.

A comment from a manufacturer stated that the NPRM implied "different sets of data between engine manufacturers." The commenter suggested additional engine information to be recorded for each engine:

N2 —High Rotor Speed
EGT—Exhaust Gas Temperature
TLA—Throttle Lever Position
N1 —Low Rotor Speed
WF —Fuel Low
CLA—Fuel Cutoff Lever Position

The commenter also suggested recording maintenance and status words from the electronic engine controls.

The FAA encourages including these additional parameters, as appropriate, but is not mandating them.

Construcciones Aeronauticas, S.A. (CASA) objected to the reference in the NPRM to two CASA C-212 accidents that occurred in 1987. CASA stated that some facts about the accident were incorrect in the NPRM and that the FAA should publish a correction. The FAA has checked the NTSB June 1988 recommendation letter and has determined that the NPRM accurately reflected the facts as they were stated by the NTSB in that letter.

A manufacturer of recorder equipment requested that the FAA consider the manufacturer's new type of cockpit recorder. Information on the recorder was submitted with the comment. The comment does not require an FAA response.

The Air Line Pilots Association (ALPA) comment, which was generally supportive of the proposal, requested a change in §121.343(e) which requires that required flight recorders "must be operated continually from the instant the airplane begins to takeoff roll until it has completed the landing roll at an airport." ALPA stated that this provision "hampers the collection of valuable data which can be used in evaluating the DFDR data." ALPA requested that the language be changed to require recorder operation to begin at the time of engine start to the time of engine shutdown at the end of the flight in order to provide "steady state" information. Two other commenters also requested that recording cover the ground operation phase.

No revisions to §121.343(e) were requested by NTSB or included in the proposed rule. The present Part 121 requirement was simply carried over to Part 91 and Part 135 requirements. A revision of the requirement is beyond the scope of this rulemaking action and would necessitate additional rulemaking proposals. However, most operators presently activate flight recorders at engine start and other operators who wish to record "steady state" data are encouraged to consider the ALPA comment.

ALPA also strongly opposes the "use of CVR recordings for any purpose other than pure accident investigation activities" and the "premature release" of CVR information during accident investigations.

One commenter stated a belief that "in recent years, because of the rapid growth of the airlines industry, training and experience levels have dropped. . . ." The commenter stated that the FAA should require additional training and safety measures rather than additional equipment. The FAA does not believe the situation is an either/or; FAA has taken action on training and other safety measures, for example, its windshear training proposal (52 FR 20560, June 1, 1987). In any event, consideration of additional pilot training and safety measures outside the area of recording equipment is beyond the scope of this rulemaking action.

Summary of Rule Changes

Significant changes between the proposed rule and the final rule are summarized below. These changes were discussed in the appropriate sections of the Comment Discussion above:

(1) The compliance dates have been extended from 2 years to 3 years.

(2) Pre-wiring requirements in §91.35 and §135.52 have been deleted.

(3) The requirements for airplanes currently equipped with a digital data bus are clarified in §§ 121.343(e) and 125.225(c).

(4) Certain of the parameters in Appendix B of Part 121 have been made optional.

(5) Aircraft required to be upgraded under §135.152(b) must meet the 11-parameter or 17-parameter flight recorder requirements (currently required of certain airplanes used under Part 121) except those manufactured after October 11, 1991.

(6) Requirements pertaining to the use of boom microphones have been clarified.

(7) The resolution readout column in each of the appendices has been made applicable only to aircraft manufactured after4 October 11, 1991.

The changes above were coordinated with the NTSB staff who have indicated agreement that this final rule meets the intent of the NTSB recommendations in its letter of June 19, 1987.

In addition to the above changes, Parts 23 and 27 have been revised to include airworthiness requirements for flight and voice recorders. In the proposal such airworthiness requirements were only in Parts 25 and 29, and all operators subject to flight and voice recorder requirements were referred to those parts. In the interest of consistency, the final rule includes airworthiness requirements for flight and voice recorders in Parts 23, 25, 27, and 29. References in the operating rule have been revised accordingly.

REQUEST FOR ADDITIONAL COMMENTS ON PART 91 REQUIREMENTS

Notwithstanding that the Part 91 requirements have been incorporated in this final rule, the FAA is still interested in receiving comments with respect to issues raised in Notice 88-1. The FAA is particularly interested in comments regarding the questions asked on page 4321 of the *Federal Register* publication of the notice (53 FR 4314). Therefore, a comment period of 90 days is being provided to allow the public to comment accordingly. The FAA will review all additional comments submitted and, within 1 year after the publication of this amendment in the *Federal Register*. will publish a document discussing all comments, presenting FAA findings based upon the comments, and proposing any revisions to the requirements contained herein, if necessary.

REGULATORY EVALUATION SUMMARY

The complete regulatory evaluation of the final rule is available in the regulatory docket. A discussion of those comments addressing the regulatory evaluation of the notice and a summary of the final regulatory evaluation are presented below.

Comments addressing the regulatory evaluation generally expressed concern about the costs of the proposed regulations, but provided very little detail in support of their conclusions. This was true with respect to both direct acquisition and installation costs, and indirect costs from factors such as reduced payload or aircraft range.

Some commenters stated that the amendments would impose a severe economic burden on small companies operating small aircraft for hire. The FAA is aware that the amendments will result in economic impacts. However, the Department of Transportation has been directed by the Congress to take these actions.

Some commenters misinterpreted the significance of the 10-year analysis period to mean that the FAA expected operators to spread their retrofit costs over 10 years. FAA's cost estimates were for total program costs over 10 years. In developing these estimates, retrofit costs were concentrated in the first two years of the analysis period. However, the FAA has extended the compliance period from the proposed 2-year period to three years in the final rule, which should provide relief to many operators.

Some commenters expressed concern about the high cost of retrofitting their aircraft. However, it appears they misunderstood that certain proposed flight recorder requirements would apply to newly manufactured aircraft only. Further, concerns were expressed that a 32 parameter retrofit requirement for 20 to 30 passenger seat aircraft operated under Part 135 would impose requirements that are more stringent than those requirements applicable to existing Part 121 aircraft. This issue has been resolved in the final rule by adopting requirements for existing 20 to 30 passenger Part 135 aircraft that are similar to the current Part 121 requirements.

One commenter stated that the FAA did not consider initial development and certification costs in its regulatory evaluation. However, the FAA did attempt to account for this by adding 10 percent to its equipment and installation cost estimates to provide for certification, start-up, and support equipment costs for proposals affecting aircraft operated under Parts 91, 125, and 135. This was not done for Part 121 because aircraft exist that meet the proposed requirements, and support equipment already is in service because of existing recorder requirements.

The regulatory evaluation of the final rule is very similar to the regulatory evaluation of the notice. Appropriate revisions have been made to reflect the extension of the compliance period from 2 years to 3 years, the easing of the flight recorder retrofit requirements originally proposed for larger Part 135 aircraft, and other minor clarifying changes.

Briefly, the costs of these rules result from the need to acquire, install, and maintain recorder equipment, as well as the cost of additional fuel consumption attributable to the additional weight of this equipment, and miscellaneous costs related to engineering and certification requirements, support equipment, and administrative start-up costs. The FAA estimates that the cost for all categories of aircraft affected by these rules will be approximately $297 ± million (1987 dollars), or a present value of $207 ± million when discounted back to the start of the ten-year analysis period using the 10 percent discount rate prescribed by the Office of Management and Budget. Other potential costs of this rule that have not been quantified include diminished payload carrying capability and/or reduced range that may affect some smaller aircraft as a result of the weight and volume of these recorders, as well as possible safety tradeoffs with other equipment, such as traffic alert and collision avoidance systems, ground proximity warning systems, weather radar, etc. Solid state technology potentially could avoid or reduce many of these costs and tradeoffs.

Flight recorders and cockpit voice recorders provide information only, which does not directly save lives or prevent accidents. Accidents and casualties are prevented by other actions, such as improvements in aircraft design or operating procedures, which may result from information gained by recorders. Because the benefits of recorders are indirect, they have only been discussed qualitatively in this analysis.

Flight recorders have proven effective in determinations of aircraft structural, mechanical, and systems failures that have led to corrective actions such as aircraft modifications or changes in operating procedures. Flight recorders are extremely useful in identifying the responses of flight crews to hazardous situations, and they contribute substantially to human factors analysis. Flight recorders also help define more precisely those operational problems that need to be addressed through research and development programs, such as windshear encounters. Further, many lessons learned from flight recorders, especially those concerning human factors and operational problems, are not limited to the particular aircraft type involved in an accident. Rather, they provide safety insights that are beneficial to all pilots operating many different types of aircraft under various operating rules. Additionally, recorders will aid significantly in the analysis of those accidents that will inevitably be experienced by aircraft utilizing new technologies, such as fly-by-wire control systems, canards, and extensive use of composite materials in aircraft structures.

INTERNATIONAL TRADE IMPACT ASSESSMENT

These amendments will have little or no impact on trade for either U.S. firms doing business in foreign countries or foreign firms doing business in the United States. The amendments will affect only U.S. air carriers and operators. Foreign air carriers are prohibited from operating between points within the United States; therefore, they would not gain any competitive advantage over the domestic operations of U.S. carriers. In international operations, foreign air carriers are not expected to realize any cost advantages over U.S. air carriers because many foreign countries have recorder requirements that are as stringent as those adopted in this final rule. Further, general aviation operations conducted in the United States are not in any direct competition with foreign enterprises. For these reasons, the FAA does not expect that these amendments will result in any trade impact.

REGULATORY FLEXIBILITY DETERMINATION

The Regulatory Flexibility Act of 1980 (RFA) was enacted by Congress to ensure that small entities are not unnecessarily and disproportionately burdened by government regulations. The RFA requires agencies to review rules that may have "a significant economic impact on a substantial number of small entities."

Any small entity that operates any aircraft in the categories that are included in the amendments to Parts 91, 121, 125, and 135 would be affected by this rule. Some of these amendments could result in "a significant economic impact on a substantial number" of small entity operators and air carriers. Most manufacturers that certificate aircraft under Parts 25 and 29 are not small entities and therefore are not subject to the RFA.

The following analysis explains the reasons for this determination concerning operators and air carriers. In developing estimates of annualized net compliance costs, uniform annualized costs for capital investments have been determined by multiplying the amount of the investment by a capital recovery factor appropriate for the discount rate and period of the analysis. A capital recovery factor of .155, based upon a 10 percent discount rate over a 10-year period, has been used in this analysis. Threshold cost values and small entity size standards are those stated in FAA Order 2100.14A, *Regulatory Flexibility Criteria and Guidance*. Values have been adjusted to 1987 dollars.

The threshold values defining a significant economic impact for scheduled carriers are $96,200 if the entire fleet has a seating capacity of over 60 seats, and $53,800 for other scheduled carriers. The threshold value for an unscheduled operator is only $3,800. Further, a small entity operator of aircraft for hire is defined as one which owns 9 or fewer aircraft.

The annualized cost for the least expensive requirement adopted in this final rule, a CVR retrofit, is approximately, $3,500 per aircraft. Therefore, an operator owning only one aircraft is very close to the $3,800 threshold for unscheduled operators, and any operator owning more than one aircraft is well over the threshold. This would apply to virtually all small Part 135 operators affected by the rule. A similar argument can be made for Part 125 operators owning only one aircraft because they would be required to retrofit the far more expensive flight recorders as well as CVR's. It is possible that a substantial number of small entities (defined as one-third of the small entities affected by the particular proposal) could incur significant economic impacts, particularly scheduled Part 135 operators (commuters) if they obtain between 6 and 9 new aircraft with 19 or fewer seats, or retrofit between about 4 and 9 aircraft with 20 to 30 seats. Further, any small unscheduled Part 121 operator purchasing one or more new aircraft not equipped with a digital data bus and digital flight data acquisition unit (DFDAU) will exceed the threshold for nonscheduled operators.

Part 91 operators of aircraft affected by these proposals generally are not small entities, however, and therefore would not be subject to the RFA. For these reasons, the FAA has determined that these amendments may have a significant economic impact on a substantial number of those small entities operating under Parts 121, 125, and 135, and a regulatory flexibility analysis is required under the terms of the RFA. The final regulatory flexibility analysis follows below.

FINAL REGULATORY FLEXIBILITY ANALYSIS

As required by Section 604 of the RFA, the following analysis deals with the proposed flight recorder requirements as they relate to small operators.

A. *Why Agency Action is Taken*

This rulemaking is in response to Congressional action and to several recommendations made by the NTSB. The reasons for agency action are detailed in the preamble and the regulatory evaluation.

Briefly, the advantages of additional recorded information have been demonstrated by those aircraft so equipped, and it is desirable that more specific information be obtained following an accident involving additional categories of aircraft than is possible under current regulations.

B. *Summary of Issues Raised by Public Comments*

Comments addressing those issues identified in the initial regulatory flexibility analysis as potentially affecting small entities primarily concerned the impact of the proposals on Part 135 operators. These commenters generally expressed concern that the proposals would impose unreasonable costs on operators in comparison to any safety benefits that might result. (Similar comments were received concerning Part 91 operations. However, those entities that conduct Part 91 operations in aircraft that will be affected by this rule generally are not small entities.)

In view of the data submitted, the final rule has been modified to extend the compliance period from 2 years to 3 years; and the flight recorder retrofit requirements for 20 to 30 passenger seat Part 135 aircraft have been reduced from the 32 parameters proposed, to only 11 or 17 parameters, depending upon the date of type certification (essentially, the same requirements as those currently in Part 121).

C. *Alternatives to the Proposal*

Other than those revisions discussed above, no alternatives to these proposals have been considered. The Secretary of Transportation has been directed by Congress to initiate a rulemaking that considers the recommendations of the National Transportation Safety Board to the Federal Aviation Administration concerning the use of cockpit voice recorders and flight data recorders on commuter and other aircraft. The FAA has concluded that Congress intended the NTSB to have available whatever data it needs for accident investigation purposes if acquiring that data is technologically feasible.

FEDERALISM IMPLICATIONS

The regulations set forth in this notice are proposed under the authority in the Federal Aviation Act of 1958, as amended (49 U.S.C. 1301 et seq.). The FA Act has been interpreted to preempt State law regulating the same subject. Thus, in accordance with Executive Order 12612, it is determined that this proposed regulation does not have federalism implications requiring the preparation of a Federalism Assessment.

CONCLUSION

The FAA has determined that this amendment is not major under Executive Order 12291 but that it is significant under the Department of Transportation Regulatory Policies and Procedures (44 FR 11034, February 26, 1979). For the reasons discussed above, it also has been determined that the rule may have a significant economic impact on a substantial number of small entities.

The Rule

Accordingly, the Federal Aviation Administration amends Parts 23, 25, 27, 29, 91, 121, 125, and 135 of the Federal Aviation Regulations, effective October 11, 1988.

The authority citation for Part 135 is revised to read as follows:

Authority: 49 U.S.C. 1354(a), 1355(a), 1421 through 1431, and 1502; 49 U.S.C. 106(g) (Revised Pub. L. 97-449, January 12, 1983).

Amendment 135–27

Airborne Low-Altitude Windshear Equipment and Training Requirements

Adopted: September 22, 1988 **Effective: January 2, 1989**

(Published in 53 FR 37688, September 27, 1988)

SUMMARY: The FAA amends Part 121 to require airborne low-altitude windshear warning and flight guidance equipment in airplanes and Parts 121 and 135 to require windshear training for flight crewmembers. The National Transportation Safety Board investigations show that low-altitude windshear has been a prime cause of air carrier accidents. This rule is expected to reduce windshear related accidents by training pilots in avoidance and escape techniques and by providing a low-altitude windshear warning system with flight guidance equipment in certain airplanes to increase the margin of safety if windshear is inadvertently encountered.

DATES: *Effective Date*: January 2, 1989.

Compliance Dates: 1. Training requirements in §§ 121.409, 121.419, 121.424, and 121.427; §§ 135.345 and 135.351: January 2, 1991. 2. Equipment requirements in § 121.358(a): January 2, 1991, unless certificate holder obtains an extension in accordance with § 121.358(b).

FOR FURTHER INFORMATION CONTACT: Gary E. Davis, Project Development Branch (AFS-240), Air Transportation Division, Office of Flight Standards, Federal Aviation Administration, 800 Independence Avenue SW., Washington, DC 20591; Telephone (202) 267–8096.

SUPPLEMENTARY INFORMATION:

Background

On June 1, 1987 (52 FR 20560), the FAA published Notice of Proposed Rulemaking (NPRM) 79-11A proposing airborne low-altitude windshear equipment and training requirements. The NPRM was preceded by Advance Notice of Proposed Rulemaking (ANPRM) 79-11 [44 FR 25867, May 3, 1979]. The ANPRM invited public participation in addressing low-altitude windshear in the following ways: (1) By placing windshear detection equipment on the ground and transmitting information to the pilot; and (2) by installing equipment aboard the aircraft that would provide the pilot with windshear information in "real time."

The ANPRM and NPRM were actions in the FAA's continuing efforts to combat the windshear problem. A full discussion of studies, Advisory Circulars, accident/incident data, and NTSB recommendations on windshear appeared in the preamble to NPRM 79-11A. The following information briefly summarizes FAA efforts since 1975.

- In 1975, the National Aeronautics and Space Administration (NASA), in cooperation with the FAA, instituted the Aviation Safety Reporting System (ASRS) whereby safety-related incidents involving aircraft operation are submitted voluntarily and treated anonymously to identify safety problems. Windshear is among the problems identified by reports submitted under this system.
- In 1977, the FAA conducted a study of NTSB reports on aircraft accidents and incidents related to low-altitude windshear that had occurred from 1964 through 1975.
- In May 1977, the FAA amended Part 121 of the Federal Aviation Regulations (FAR) to require air carriers to adopt an approved system for obtaining forecasts and reports of adverse weather conditions, including low-altitude windshear, that could affect the safety of flights on the routes to be flown and at airports to be used.
- The FAA issued Advisory Circular (AC) No. 00-50A, Low Level Wind Shear, to provide guidance in recognizing meteorological conditions that produce windshear phenomena and to recommend certain pilot techniques to minimize the effects of windshear when encountered during takeoff or landing.
- The FAA established a research and development program to examine the hazards associated with low-altitude windshear, develop solutions to the windshear problem, and integrate those solutions into the National Airspace System.
- At 90 major airports within the United States, the FAA installed a ground-based Low-Level Windshear Alert System (LLWAS) capable of detecting the presence of hazardous windshear in the

vicinity of the airport at the surface. The FAA intends to install an additional 20 LLWAS's at airports across the nation. In addition, the FAA is working on enhancements to the LLWAS and is cooperating with the National Center for Atmospheric Research on an operational evaluation of a Doppler radar windshear forecasting and alerting system.

- Before issuing ANPRM 79-11, the FAA, through a series of simulator experiments, investigated the effectiveness of airborne low-altitude windshear systems designed to warn pilots of the existence of windshears and to assist them in transiting or avoiding such shears.
- In November 1983, the FAA issued AC No. 120-41, Criteria For Operational Approval of Airborne Windshear Alerting and Flight Guidance Systems, to provide industry with an acceptable means of obtaining operational approval for the use of various airborne windshear systems on air carrier aircraft.
- In 1983, in response to Public Law 97-369, the FAA contracted with the National Academy of Sciences (NAS) to study "the state of knowledge, alternative approaches and the consequences of windshear alert and severe weather conditions relating to takeoff and landing clearances for commercial and general aviation aircraft." The NAS report, "Low-Altitude Windshear and Its Hazard to Aviation," was published in late 1983.
- In 1986, the FAA contracted with a consortium of aviation specialists from The Boeing Company, United Airlines, McDonnell Douglas, Lockheed-California, Aviation Weather Associates, and Helliwell, Inc., to produce the Windshear Training Aid document and windshear training videos. The Windshear Training Aid, published and distributed to industry by the FAA, provides guidance on developing flight crew windshear training curricula.

In accordance with FAA research findings and the National Transportation Safety Board (NTSB) recommendations that were based on accident investigations, the FAA proposed in NPRM 79-11A windshear training and airborne equipment requirements as part of a "systems concept" to solve the problem of low-altitude windshear. The concept includes an improved low-altitude windshear weather forecasting technique, ground-based windshear detection equipment, airborne windshear warning and flight guidance, and improved flight crew training.

The FAA has decided after thorough consideration of the comments received on the NPRM to proceed with the proposed windshear training and airborne equipment requirements with minor modifications. A detailed discussion of the major issues raised by commenters and the FAA response to the comments follows.

Discussion of Comments

Twenty-seven comments were received on the Notice of Proposed Rulemaking. The comments were submitted by air carriers, airline and pilot associations, manufacturers, individuals, and the NTSB. Most comments commended the FAA for taking action to reduce the hazards of windshear encounters. However, several commenters opposed certain proposed requirements. Specific issues that were addressed in the comments were those on applicability; airborne warning devices; flight guidance systems; training; the compliance date; and Advisory Circulars. Several comments also addressed the cost/benefit aspects of the proposed rule. A few comments recommended entirely different approaches to the windshear problem than the one the FAA proposed. Several comments were information on airborne low-altitude windshear warning and flight guidance systems. All issues and categories of comments are discussed below.

APPLICABILITY: Equipment

The proposed requirement in § 121.358 for low-altitude windshear equipment applied to any turbine-powered airplane operated under Part 121 except turbopropeller-powered airplanes. The FAA assumes that when commenters referred to "turbine-powered airplanes", they were using the term as it was defined in proposed § 121.358. The FAA did not propose windshear equipment requirements for any airplanes operated under Parts 91, 125, and 135 because accident history does not justify their inclusion.

- The Air Line Pilots Association (ALPA) objected to the exclusion of reciprocating engine powered and turbopropeller engine powered airplanes from equipment requirements in Part 121. It stated that the table provided in the NPRM showed that a sizeable percentage of the windshear accidents involved the types of airplanes that the proposed rule excluded. The comment also stated that the 1987 Annual Report by the Regional Airlines Association estimates that by 1997 61 million passengers will be carried by members of that Association. According to ALPA these airlines "traditionally use reciprocating engine and turbopropeller powered aircraft."

- The National Transportation Safety Board (NTSB) stated that the "exclusion of reciprocating engine and turbopropeller engine airplanes from this [equipment] requirement may be reasonable based upon the different performance characteristics of those airplanes." However, NTSB did "not concur with the rationale used to exclude turbine-powered airplanes operated under Parts 91, 125, and 135 from this equipment requirement." NTSB stated that it believed that "the absence of accident data to support the need for including these operations may be due to the comparatively smaller population of turbine-powered airplanes used in those operations and, in some cases, an inability to evaluate accident circumstances because of the absence of flight recorder information." The Aerospace Industries Association (AIA) also objected to the exclusion of turbine-powered airplanes operated under Part 135.

The FAA's Response: Although the table provided in the NPRM shows a number of windshear accidents involving reciprocating engine powered and turbopropeller engine powered airplanes, the airplane types involved are older airplanes that have been in service for many years and that are rapidly being retired from Part 121 operations. As pointed out in the NTSB comment, reciprocating engine powered airplanes and turbopropeller engine powered airplanes currently in operation have "different performance characteristics." The FAA agrees with the NTSB that the performance characteristics of these airplanes generally make them less vulnerable in the event of inadvertent entrance into windshear conditions.

Turbine-powered airplanes that are operated under Parts 91, 125, and 135 are excluded from the equipment requirements for several reasons. Presently no accident/incident data exists to support requiring windshear equipment for these operations. The FAA recently issued a regulation (see 53 FR 26134, July 11, 1988) which requires flight and voice recorders in certain aircraft where they are not now required when those aircraft are operated under Parts 91, 121, 125, and 135. After this rule becomes effective, the FAA will be able to gather more complete data and take appropriate action.

At the present time only reciprocating engine powered and turbopropeller engine powered airplanes are being operated in commuter operations (scheduled operations) under Part 135. On-demand operations under Part 135 and operations under Parts 91 and 125 are conducted with turbine-powered airplanes, but there are fewer flights and these operations are unscheduled operations and therefore do not have the same degree of exposure to hazardous windshear conditions as do the operations covered by this final rule.

Therefore, consistent with the NPRM, the final rule excludes reciprocating engine powered and turbopropeller engine powered airplanes in § 121.358 and does not include any airplanes operated under Parts 91, 125, and 135.

In addition, the FAA has determined that a clarification of "turbopropeller-powered airplanes" as used in proposed § 121.358 is needed in the final rule and has accordingly added the words "with variable pitch propellers with constant speed controls." The addition of these words clarifies the essential design characteristic of turbopropeller-powered airplanes which makes them less vulnerable to the hazards of inadvertent entrance into windshear conditions. The FAA considers this addition necessary in the event that airplanes are manufactured in the future which may have some of the characteristics of turbopropeller-powered airplanes but not variable pitch propellers with constant speed controls. Any such future airplanes would not be excluded from the equipment requirements.

AIRBORNE LOW-ALTITUDE WINDSHEAR WARNING DEVICES

Sixteen comments specifically mentioned the proposed requirement for airborne warning devices. Ten favored the requirement, three opposed it, and three opposed certain aspects of the requirement. Opposition to the requirement was primarily directed at the need to retrofit existing airplanes. Concerns about the requirement for airborne warning devices were the following:

- One or more of the predictive systems now being developed could be installed on airplanes and validated for far less cost than present warning systems.
- No research has been conducted to show that a warning device system would add a significant margin of safety over training in windshear procedures.
- Airborne warning devices may be counterproductive to training since they may encourage a pilot to pursue a course that by observation alone he would conclude is dangerous.

- Conditions other than windshear may set off the warning, causing a pilot to abort a take-off or landing, thereby creating a potential hazard where none actually exists.
- Requiring installation of warning devices may slow development of predictive systems.
- Only predictive systems can provide a pilot with information early enough to allow escape.

The FAA's Response: The FAA does not agree with the overall position of these comments that requiring an airborne warning device is premature; that the FAA should wait until predictive systems are developed and in the meantime rely solely on training in windshear recognition and escape procedures. The FAA estimates that airborne windshear predictive systems will not be available for operational use for at least another ten years. In the meantime training alone is not enough. Windshear accidents have continued to occur even after windshear training has been incorporated into many certificate holders' training programs. Since windshear training alone cannot guarantee that a pilot will recognize, avoid, or escape windshear conditions, the addition of an airborne warning device will provide flightcrews with an increased margin of safety in inadvertent encounters with low-altitude windshear.

Two systems have already received FAA certification as airborne low-altitude windshear warning and flight guidance devices on various airplanes. In addition, several other manufacturers have made formal application for a Supplemental Type Certificate (STC) for other systems. Any of these systems could provide the flightcrew with enough warning and guidance to enhance the probability of successfully accomplishing the windshear escape procedure for the particular system.

One of the low-altitude windshear warning systems that has been certified and is being used has provided operational data. This data indicated that the warning system provides a significant benefit to the flight crew of the aircraft. This data also indicated that nuisance and false alerts were found to occur at an acceptably low rate to maintain flight crew confidence in the system. (For details see paper titled "Flight Experience with Windshear Detection", by Terry Zweifel presented to the SAE Aerospace Control and Guidance Systems Committee, March 9-11, 1988).

Because of the seriousness of the windshear problem, a regulatory proposal to require implementation of an available low-altitude windshear warning system that could alleviate the problem should not be delayed. The public must be given the maximum available protection from the catastrophic accidents which operating experience has demonstrated can occur.

The requirement for airborne low-altitude windshear warning systems does not mean that the FAA will reduce its commitment to other windshear equipment development. As stated in the NPRM, the FAA will continue to foster research programs to design better flight guidance and control aids which will improve a pilot's ability to avoid an accident in the event of a windshear encounter. Future FAA action will place emphasis on fostering the development of predictive technology for use in systems to detect and avoid inadvertent entrance into windshear. The FAA will continue pursuing a "systems concept" which includes an improved low-altitude windshear weather forecasting technique, ground-based windshear detection equipment, airborne windshear detection equipment, and improved pilot training.

FLIGHT GUIDANCE

Except for the National Transportation Safety Board and the Air Line Pilots Association, virtually all of the commenters either opposed or expressed some reservations about the proposed requirement that the approved airborne low-altitude windshear warning system be equipped "with flight guidance." The overall thrust of the opposing comments, like the comments opposed to installing warning devices, was that the cost of retrofitting present aircraft with a flight guidance system far outweighed the potential benefits. ATA on behalf of its member airlines asserted that "the resources that would be required to install guidance systems could better be used for avoidance systems when they become available—an eventuality not too far in the future, according to some."

The FAA's response: The FAA does not agree that increased safety would be achieved in a more cost effective way by eliminating the flight guidance requirement and waiting for the windshear detection systems presently in development. As previously stated, the FAA does not believe that fully functional, tested, and reliable windshear detection systems are as close at hand as do several commenters. Nor does the FAA believe that a windshear detection system, if developed, would make a windshear flight guidance system unnecessary. While the FAA agrees that windshear avoidance is the most desirable solution to the windshear problem, 100% avoidance may never be achievable so that an effective flight guidance system may still be highly desirable even if a detection system is developed. The cost/benefit aspects of the flight guidance requirement are discussed under the economic evaluation portion of this preamble. Specific comments regarding the flight guidance requirement are discussed below.

- Several commenters stated that the cost to retrofit existing aircraft with flight guidance systems is disproportionate to the safety gain, especially for aircraft that do not now have go-around or takeoff flight guidance functions in their flight director systems. Some of these commenters pointed out that the Windshear Training Aid states that the manual technique [maximum power and establish a 15 degree body angle pitch on the attitude director indicator] comes within 5—10% of the potential performance using flight guidance. One commenter concluded that "the difference between manual (no guidance) recovery and optimal (but not practical) guidance is something at or less than 5%!"

The FAA's Response: The cost/benefit aspects of the flight guidance system requirement are discussed fully under the economic evaluation portion of this preamble. As more fully explained there, the FAA believes that flight guidance systems should be required for turbine-powered airplanes operating under Part 121. The remaining life span of many airplanes already operating under Part 121 is sufficiently long to justify the retrofitting expense of providing low-altitude windshear flight guidance in the event of an inadvertent windshear encounter. The Windshear Training Aid (WTA) statement does not refute this conclusion. However, it should be noted that the conclusions drawn in the WTA with respect to comparing the performance efficiency of the manual technique with flight guidance were based on the assumption that, for the manual technique, the transfer of learning effectiveness from the classroom to the airplane is 100 percent. The conclusion was then drawn that, based on the transfer of learning assumption, the manual technique would be effective 90-95 percent of the time for those few windshears encountered. The behavior pattern resulting from windshear training using various media (e.g. classroom instruction, training devices, cockpit procedures trainers, simulators, etc.) may be degraded over time. Thus, in an actual severe low-altitude windshear encounter, an individual pilot's reaction using the manual technique most likely would not approach the 90—95% potential described in the WTA.

- There is no general industry agreement on present flight guidance algorithms (that is, on just what directions the pilot should be given).

The FAA's Response: One hundred percent agreement on existing algorithms may not exist; however, software has been developed that is adequate to obtain FAA approval. With flight guidance provided by this software, a pilot would have a better chance of taking action necessary for the aircraft to survive an inadvertent encounter with low-altitude windshear.

- Adaptation and modification of older electro-mechanical flight director systems may affect the integrity of the existing systems, thereby derogating safety.

The FAA's Response: Modification of older flight director systems should not affect the integrity of those systems. The approved airborne low-altitude windshear warning with flight guidance system to be installed must have been certificated in accordance with the appropriate sections of Part 25 of the FAR and must meet the respective airworthiness and operational approval criteria addressed in AC 25-12 and AC 120-41 or their approved equivalent. This approval process would ensure that the integrity of those systems would not be compromised.

- FAA should not require flight guidance systems until it has completed its characterization of the windshear phenomenon which is not scheduled to be completed until 1991.

The FAA's Response: Enough has been learned about the windshear hazard to permit the certification of several windshear systems. The past accident scenarios are well understood and there has been an enormous amount of data generated by the Joint Airport Weather Studies (JAWS) program. While the potential hazards will continue to be studied and further defined there is an adequate base of knowledge to design and certificate a flight guidance system.

- "Optimal flight guidance may not be practical at this time since many of the present systems require nose down control inputs very close to the ground.

The FAA's Response: Optimal flight guidance can only be developed when there is complete knowledge of the characteristics of the air mass in front of the aircraft. Optimal flight guidance is a time dependent variable state which must consider a rapidly changing air mass, as well as special situations (i.e., altitude, speed, configuration, etc.). In the certification process the FAA will evaluate all guidance commands, including nose down commands, for appropriateness. If the optimal guidance

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strategy for a particular windshear situation requires nose down control inputs so close to the ground that it would cause collision with the ground, the guidance strategy would be unacceptable and would not be certificated. It should be noted that "nose down" does not mean below the horizon. It means to lower the nose from its present angle.

- While the flight guidance function provides a small increase in the magnitude of the windshear in which an aircraft can successfully operate, that increase only occurs at very high windshear values. Therefore, because of the serious turbulence that would be encountered, this small gain could easily be offset by the pilot's inability to closely follow the commands being given.

The FAA's Response: The FAA recognizes that in the worst cases of severe windshear escape may not be possible and, depending upon the cause of the windshear phenomena, flight guidance commands may not be readable because of severe turbulence. However, it is possible to have severe windshear without severe turbulence. Furthermore, for those windshears from which escape is possible, flight guidance provides an additional margin of safety. Between the moderate to severe levels of windshear, flight guidance can provide a gain in performance.

TRAINING

Virtually all of the comments received favored the proposed training requirements. A number of comments addressed specific training requirements, particularly those requirements concerning simulator flight training. All specific comments are summarized below.

- Flight Safety International stated that helicopter operators should be excluded from the training requirements for recovery and escape procedures because not enough data exists to develop training in such procedures for helicopters.

The FAA's Response: The FAA agrees with the commenter. The FAA has decided to exclude helicopters from the escape training requirements because there are insufficient data on helicopter response to windshear encounters. Accordingly §§ 135.293(a)(7)(ii) and 135.345(b)(6)(ii) have been changed to include the words "except that rotorcraft pilots are not required to be trained in escaping from low-altitude windshear."

- Some comments showed confusion about the intended meaning of the proposed training requirements. Continental Express was concerned that the proposed rule excludes turbopropeller-powered airplanes in § 121.358 from low-altitude windshear equipment requirements without excluding them from the simulator windshear training requirements in subsequent sections of the rule. Flight Engineers' International Association stated that the proposed flight training requirements do not apply to flight engineers and that the FAA probably intended that they should apply to all cockpit crewmembers. Another commenter was concerned that the required windshear training program might have to be a separate and therefore costly training program.

The FAA's Response: As proposed, the language of § 121.409(d) requires simulator windshear flight training only if the airplane is required to be equipped with low-altitude windshear equipment under § 121.358. Therefore, flight training would not be required for pilots flying those turbopropeller powered airplanes excluded from the coverage of § 121.358.

In response to the comment from Flight Engineers' International Association, the proposed amendments to Part 121 included requirements for initial, transition, and recurrent ground training in windshear recognition, avoidance, and escape procedures for pilots and flight engineers, but proposed requirements for flight training in windshear procedures and equipment use were intended only for pilots who are at the controls of the airplane. Current § 121.425 which covers flight training for flight engineers is not being amended by this rulemaking. Windshear ground training in § 121.419 is applicable to all flight crewmembers while windshear flight training in simulators applies only to pilots operating airplanes equipped with low-altitude windshear equipment. If a certificate holder wishes to provide flight training in windshear procedures and equipment for flight engineers, it may do so, but the FAA is not requiring such training.

Finally, in response to the comment concerning windshear training as a separate program, as the FAA explained in the preamble of the proposed rule, the phrase "an approved low-altitude windshear flight training program" was used to refer to the proposed upgraded flight training requirements. The phrase was not intended to mean that there should be a separate training program for those who must provide low-altitude windshear flight training. Instead, the intention is that the approved low-altitude windshear flight training be incorporated into the certificate holder's approved training program.

- The Air Transport Association (ATA) would like to see different wording than that proposed in § 121.409(d) and 121.424(d) which stated that a pilot must have training and practice in "at least" and "at least all of" the windshear escape maneuvers and procedures in the operator's approved low-altitude windshear flight training program. ATA commented that if the FAA's intent was to require that every pilot receive training in every exercise a carrier develops, carriers might be discouraged from developing multiple exercises.

The FAA's Response: One means of approval of the windshear training portion of a certificate holder's approved training program is the Windshear Training Aid developed by the FAA and the industry team led by Boeing. In July, 1987, this material was widely distributed to all Part 121 operators and to Part 135 operators conducting scheduled operations and within the FAA. The FAA intends that the minimum number of windshear escape maneuvers to be performed in an approved airplane simulator for approved windshear flight training would include at least the maneuvers and procedures associated with the four basic exercises set forth in the Windshear Training Aid. These exercises have the pilot encounter a windshear situation— (1) before achieving rotation speed on takeoff; (2) during a rotation on takeoff; (3) during an initial climb shortly after takeoff; and (4) during a precision approach. Each certificate holder should develop sufficient variation in the exercises to avoid stereotyping in the training.

In §§ 121.409(d) and 121.424(d)(2) the phrase "at least" is retained, while "all of" has been deleted from § 121.424(d)(2). These changes should make the FAA intent clear, namely that each pilot must receive training in the minimum number of windshear escape maneuvers and procedures that constitute the certificate holder's approved low-altitude windshear flight training program. The "required" training would not include all the possible exercises that an operator might develop for its approved low altitude windshear training program.

- While logically most windshear flight training should be conducted in a simulator, some commenters wanted an "escape option" in the event that simulators were not available for training. They did not think a pilot's training should be delayed if windshear training in a simulator is temporarily not available. If the pilot could substitute such training in an airplane, at least for some of the training requirements, this would be of help.

The FAA's Response: The FAA believes that windshear flight training cannot effectively be given in an airplane because the total environment of a windshear cannot be artificially reproduced in an airplane and it would be too dangerous, in addition to being impractical, to search out actual windshear conditions. It is practice in the use of proper procedures and techniques under the extreme conditions of windshear that must be accomplished. This can be done safely only in a simulator.

To minimize the overall impact of the training requirements on simulator time, planning will be necessary. Part 121 certificate holders should plan for the downtime necessary to modify simulators and the increased training time, and should anticipate usual malfunction and maintenance downtime. With proper planning the training compliance date of two years after the effective date of the rule, January 2, 1989, should allow for modification of simulators without delays in complying with current training requirements. Certificate holders should begin their planning as soon as this rule is published. They may have to begin their low-altitude windshear training as early as one year after the effective date so that they will not have to schedule special training for second-in-command pilots whose last previous recurrent training occurred less than a year earlier.

As a practical matter, most certificate holders use simulators now to meet the six-month training and proficiency check requirements for a pilot in command. The additional flight training required in windshear procedures will add approximately 15 minutes of simulator time. Approximately 80 percent of the pilots and copilots who will be subject to the windshear flight training requirements have at some time received some windshear flight training in simulators. Although certificate holders will have to revise their programs to meet the new requirements, for most pilots and co-pilots actual training time will not necessarily be significantly increased. Since current requirements for recurrent training allow for a 30-day grace period (14 CFR 121.401(b)), air carriers will have flexibility in meeting the recurrent windshear training requirements. Therefore, with proper planning, the simulator windshear flight training requirements should not significantly affect simulator use.

- Proposed § 121.409(d) stated that a certificate holder must use "an approved simulator for each airplane type . . . ." Two commenters stated that if this means that each simulator must have the same windshear related avionics as the aircraft that operator is using, the requirement is too restrictive. They state there are two related problems. One, since simulator time is often leased, simulators that are now being leased by some operators may not be adapted with windshear avionics for the type of windshear equipment the operator will have installed. Thus the operator may have difficulty getting simulator time on simulators with the appropriate windshear avionics. Second, Continental Airlines stated that the "escape maneuver should be generic and not dependent on the hardware installed in the aircraft or simulators."

The FAA's Response: While the responses of most trained pilots to windshear are very similar, the performance of the aircraft and the technical characteristics of the windshear equipment differ. Therefore, a pilot needs to practice in a simulator equipped with the same windshear equipment which will be installed in airplanes the pilot will fly. This is especially important since pilot responses to windshear must be performed within seconds. Pilot understanding of equipment differences and aircraft performance differences could be critical.

The availability of simulator time on simulators with the appropriate windshear avionics is a factor that a certificate holder will need to consider and plan for before installing windshear equipment. A certificate holder that is leasing simulator time will need to determine in advance if that simulator will be updated for the appropriate windshear avionic equipment. Also a simulator owner who wants to continue leasing will need to plan for certificate holders' new windshear flight training requirements. Current rules for simulator flight training require a certificate holder to use an approved simulator for each airplane type, and most simulators are capable of being adjusted to allow training for different windshear systems. Therefore, the FAA anticipates that with proper planning and coordination the industry will be able to provide training on a simulator for each airplane type with the approprate windshear avionics by the compliance date.

- ATA's comment maintains that mandatory windshear escape training and current approach-to-stall maneuvers required in Part 121 may be redundant. Both types of maneuvers involve high power, low speed conditions, and once clear of the windshear, the cleanup recovery from the windshear escape maneuver is identical to the approach-to-stall cleanup recovery.

The FAA's Response: The FAA does not agree that these are redundant requirements. While some similarity of maneuvers may exist, the situations and objectives are different. Windshear occurs in a highly unstable environment while stalls can occur at any time. Approach-to-stall maneuvers are a proficiency requirement while windshear escape maneuvers and procedures do not have a proficiency objective or a performance standard. In windshear flight training the objective is to practice windshear escape procedures in a real time dynamic environment, not to train to a proficiency standard.

- One commenter supported a six-month recurrent windshear ground training requirement but recommended only an annual requirement in an airplane simulator. The commenter stated that "recovery/escape from a low level windshear is basically a mechanical maneuver" and that "as long as the pilot remembers and understands the concept of recovery the probability of success is greatly increased." Therefore, the commenter maintained that "twice annually, monthly, or weekly practice of recovery maneuvers will not ensure one hundred percent" successful recovery.

The FAA's Response: To clarify, a six-month recurrent simulator windshear flight training requirement would apply only to a pilot in command (§ 121.427(d) and § 121.433(c)(1)(iii) and (d)). A second in command would be required to have annual recurrent training (§ 121.433(c)(1)). Demonstration of proficiency in escaping windshear is not the objective of the windshear flight training requirement. Adding windshear simulator flight training to pilot recurrency requirements will provide the pilot with practice in the correct procedures for an event which from a statistical standpoint will be infrequently encountered, but to which a pilot is potentially exposed at all times. The FAA believes that practice in windshear escape procedures will prepare pilots to respond immediately and appropriately in an inadvertent windshear encounter.

EFFECTIVE AND COMPLIANCE DATES

Several commenters who objected to the flight guidance portion of the windshear equipment requirement stated that the two-year compliance date was unacceptable for the following reasons:

- It would require too much downtime for aircraft within a fleet.
- It would be impossible for manufacturers of windshear equipment to supply the equipment within a two-year period.

- There are not enough trained mechanics and other technicians to accomplish the required work within two years, and it would be impractical to recruit and train persons for such a peak-load project since they would likely be laid off afterwards.
- To meet the flight training requirements, simulators would have to be updated, software would have to be developed, and simulators would have considerable downtime. Considering how much simulators are used in pilot flight training and recurrent training and testing, the downtime might seriously interfere with pilot training. In addition, at least one commenter questioned whether the FAA or industry would be responsible for development of the windshear software.

The FAA's Response: Because of the immediacy of the windshear problem, the FAA wants to ensure that there is no unnecessary delay in providing the traveling public with the additional margin of safety sought by these new requirements. However the FAA must allow sufficient time for the resolution of any technical problems with equipment, for production of the needed equipment, and installation and inspection on aircraft. Probably the major limiting factor, other than possible technical problems, is the availability of enough trained mechanics. The FAA recognizes that even if it were practical to train more mechanics to meet increased demand, the necessary training time would make a two-year compliance date for all airplanes impractical. Therefore, to allow time to resolve any technical problems with equipment, for equipment manufacture, order placement, delivery and installation of the equipment, the FAA is permitting a phased compliance schedule for retrofit requirements under certain conditions. The final rule (§ 121.358) requires compliance by two years after the effective date for all airborne equipment requirements unless an operator submits and obtains approval for a retrofit schedule that shows a phased compliance over a 4-year period from the effective date. A request for extension of the compliance date must be submitted no later than 18 months after the effective date. The phased retrofit compliance schedule applies only to airplanes whose date of manufacture was before the effective date of the rule. For the purpose of this section "date of manufacture" means the date the inspection acceptance records reflect that the airplane is complete and meets the FAA Approved Type Design Data. At least 50 percent of such airplanes which are listed on the certificate holder's maintenance operations specifications on the date of submission must be retrofitted within 2 years after the effective date, at least 25 percent more of those airplanes within 3 years, and all of the certificate holder's affected airplanes within 4 years. Any certificate holder that obtains a compliance date extension must comply with the retrofit schedule and submit status reports every six months until completion of the schedule.

The ground and flight training provisions of the final rule will take effect two years after the effective date of the rule. To make sure that all operators are aware of the compliance dates for the training requirements, the final rule includes new § 121.404 and revised § 135.10 that state the exact date for compliance.

For certificate holders to meet the two-year compliance date for all of their pilots, most certificate holders will want to have the new windshear training program approved one year earlier (i.e., not later than one year from the effective date). In this way the certificate holder will be able to give second in command pilots their required windshear training as part of their regularly scheduled annual recurrent training. Otherwise a certificate holder will have to schedule special training for second-in-command pilots whose last previous recurrent training occurred less than a year earlier.

In order for certificate holders to meet this kind of orderly scheduling, it is important that they begin the approval process as soon as possible so that they will not be faced with last minute training and scheduling problems.

While the final rule does not contain a specific compliance date for the necessary conversion of simulators, it can be seen from the above discussion that most simulators will need to be converted within one year after the final rule takes effect.

Although the final rule allows for phased compliance for retrofits, the FAA assumes that planning will begin at the time of publication of the rule.

ADVISORY CIRCULARS

- Two commenters suggested that advisory material being developed by the FAA needs to be seen and commented on before the FAA proceeds to final rule. One stated that it was difficult to discuss the proposal without an opportunity to comment in parallel on the AC defining criteria for approving airborne low-altitude windshear equipment. The second comment stated that the AC should be part of the public record and should receive public input.

The FAA's response: Before the NPRM was issued the FAA developed and issued AC 00-50A, Low Level Windshear, AC 120-41, Criteria for Operational Approval of Airborne Windshear Alerting and Flight Guidance Systems, and the Windshear Training Aid previously discussed in this preamble. In November 1987, the FAA issued AC 25-12, Airworthiness Criteria for the Approval of Airborne Windshear Warning Systems in Transport Category Airplanes. Thus, all of the advisory material necessary for manufacturers and certificate holders to comply with the requirements of this final rule has already been published and by the time the rule takes effect will have been available for a sufficient length of time for all interested persons to be familiar with their contents.

BEYOND THE SCOPE OF NPRM

Several comments submitted were beyond the scope of this proposed rulemaking. The FAA has considered these comments as informational and is not responding to them. A summary of such comments follows:

- One comment recommended that the proposed rule be withdrawn and "in it place a requirement adopted that all transport aircraft eventually be equipped with an EFIS instrumentation system." "EFIS" stands for Electronic Flight Information System. This is a flight instrumentation system and flight guidance system that simplifies the integration of information a pilot receives from his flight instruments.
- One comment recommended that all Part 121 aircraft should operate at reduced weights by limiting the fuel, number of passengers, and baggage and cargo anytime that thunderstorms are predicted for an arrival or departure area. According to the comment this would provide the Part 121 aircraft with maneuverability closer to that of Lear jets which have had relatively few windshear accidents.
- Three comments were received which the FAA determined were primarily information about predictive or flight guidance systems that are being developed or are currently on the market. One recommended that the final rule include a requirement for a predictive system with a compliance date two years after approval of such a system.
- One commenter recommended that the FAA require a flight procedure method for transiting windshears based primarily on airspeed/groundspeed comparison.
- NTSB commended the FAA and the industry, led by the Boeing Company, for development of the Windshear Training Aid and stated that it hopes the Training Aid will be the foundation for FAA approval of training curricula implemented by air carriers in complying with the rule. It recommends that an additional training requirement be added on the use of airborne weather radar for thunderstorm and convective windshear avoidance. It considers this valuable equipment for weather detection during arrival and departure of flights.
- One commenter stated that ground training in windshear detection and escape maneuvers for Parts 125 and 135 pilots was not sufficient and that these pilots should also receive simulator training.
- TWA objected to the requirement to have 14 channels of recording capabilities on flight simulators. It stated that the FAA currently requires 8 channels for certification of flight simulators and that no benefit would be derived from having the additional capabilities. The FAA has not addressed this comment since there is nothing in this rulemaking that states the number of channels required in simulators.

ECONOMIC SUMMARY

The following is a summary of the final cost impact and benefit assessment of a regulation to amend Part 121 of the Federal Aviation Regulations (FAR) to require that certain turbine-powered airplanes be equipped with an approved airborne system that warns a pilot of the presence of hazardous low-altitude windshear conditions and if such windshear conditions are inadvertently encountered, provides flight guidance for a missed approach procedure or an escape maneuver. In addition, the rule requires that all Part 121 operators conduct approved low-altitude windshear flight training in a simulator which has installed in it windshear equipment needed to conform to the airplane type being simulated. The rule further requires that Part 121 and 135 certificate holders' training programs be required to include training concerning flight crewmember recognition of, and escape from, inadvertently encountered hazardous low-altitude windshear conditions as part of their normal ground training.

The NTSB has determined that low-altitude windshear has been the prime cause or a contributing factor in numerous air carrier accidents in the last 20 years. The objective of these rules, therefore, is to prevent or reduce accidents attributed to inadvertent encounters with low-altitude windshear.

The methods and assumptions used to prepare the economic impact estimates for the various changes to Part 121 have been developed by the FAA. The estimates of economic impacts for the final rule revisions have been constructed from unit cost and other data obtained from air carriers, industry trade associations, and manufacturers. Information for analysis of benefits was obtained from the safety records of the NTSB and the FAA. The costs calculated for these amendments have been projected over the 16-year period of 1989 to 2004. This analysis compares these costs to benefits accruing over the 15-year span of 1990 to 2004. The purpose of this is to account for the fact that in 1989, the first year after the rule is published, no airplanes equipped with the required avionics will be in service. In 1989, however, impacted entities will incur program and planning start-up costs.

In the Notice of Proposed Rulemaking (NPRM), the FAA invited public comments concerning the technical and operational considerations and economic impact assumptions as these apply to flight guidance systems equipment modification and replacement, the frequency and duration of Part 121 certificate holder's windshear simulator flight training, and the extent to which Part 135 operators provide instruction to their pilots in procedures to recognize and escape inadvertent encounters with low-altitude windshear. Comments on the proposal were submitted by individuals, foreign and domestic air carriers, air carrier and airline pilot associations, avionics manufacturers, and the National Transportation Safety Board. The majority of comments commended the FAA for taking action to reduce the hazards of windshear encounters. A number of commenters, however, opposed certain proposed requirements and disagreed with economic impact estimates presented in the proposal. The FAA has evaluated the public comments and made the final determination regarding their impact. The comments have caused the FAA to revise its analysis and increase compliance costs.

A substantial change in the final rule is the provision of a time-phased retrofit schedule for airborne windshear equipment requirements. The final rule requires compliance by 2 years after the effective date of the final rule for all airborne equipment requirements unless an operator submits a schedule to show phased compliance over a 4-year period from the effective date of the rule. Under § 121.358(b) at least 50 percent of a certificate holder's airplanes that were manufactured before the effective date of the rule must be retrofitted within 2 years, at least 25 percent more within 3 years, and the remainder of airplanes affected within 4 years. The final rule also established that the ground and flight training provisions of the rule will take effect two years after the effective date of the rule. The time permitted for compliance with the ground and flight training requirements will allow certificate holders sufficient time to train flight crews and convert simulators in advance of the compliance date for the required airborne windshear warning and flight guidance equipment. The FAA believes that the time allowed for training and equipment installation and modification will reduce costs and facilitate compliance.

The FAA finds that with the exception of new § 121.358 and the amendments to § 121.407, 121.409, 121.424, and 121.427, the amendments affecting Part 121 operators will have a negligible cost or no cost impact. The FAA has also determined the cost of compliance with the upgraded testing and training requirements of the amendments to § 135.293, 135.345, and 135.351 to be minimal.

New § 121.358 and the amendments to § 121.407, 121.424, and 121.427 have been analyzed independently. For the purpose of this evaluation, however, the costs associated with these revisions have been aggregated. The reason is that these amendments are inextricably related and share the common objective of improving the skills of pilots in recognizing and escaping from inadvertently encountered low-altitude windshear conditions.

New § 121.358 will have an economic impact on the approximate 3,800 airplanes expected to be in service in 1990 and 3,200 airplanes expected to be manufactured between 1991 and 2004 because they would be required to be equipped with an FAA-approved system providing airborne windshear warning and flight guidance. The estimated cost of this amendment is $372.2 million in 1987 dollars and $218.5 million at a present worth discount rate of 10 percent over the 16-year period of 1989 to 2004.

The amendment to § 121.407 would require that air carriers install approved windshear aerodynamic data programs in their flight simulators. The estimated cost of modifying the 150 flight simulators currently in use by Part 121 certificate holders is $6.2 million in 1987 dollars.

The cost per hour of additional simulator utilization has been estimated under § 121.409 and added to the time captains and first officers would spend in a flight simulator to comply with the windshear simulator flight training requirements of §§ 121.424 and 121.427.

The FAA has determined that approximately 80 per cent of the affected certificate holders already provide the windshear flight training required by §§ 121.424 and 121.427. Therefore, the amendments to these sections would impact approximately 20 percent of the active and future captains and first officers of the 149 Part 121 certificate holders affected by the rule. The estimated cost of compliance with the initial, transition, and upgrade windshear flight simulator training requirements of § 121.424 would be $13.4 million in 1987 dollars and $7.1 million when discounted at 10 percent over the 15-year span between 1989 and 2004. The estimated cost of requiring the affected captains and first officers to undergo windshear simulator flight training pursuant to the recurrent training requirements specified in § 121.427 would be $33.8 million in 1987 dollars and $15.2 million at a present worth discount rate of 10 percent over the same time period.

This analysis indicates that the total cost of compliance with the equipment acquisition, installation, maintenance and flight training requirements contained in this rule is estimated to have a present value of $246.5 million over the 16 year-period of 1989 to 2004.

To estimate the benefits for the NPRM, the FAA examined the safety record of Part 121 air carriers for the 15-year period between 1971 and 1985. At the time, this review indicated that 15 accidents attributed to windshear phenomena occurred during this period. A more recent review, however, reveals that two more accidents attributed to windshear have been added to the safety record by the NTSB for the same 15-year period in question. Accordingly, the losses associated with the 17 accidents are the basis for the benefits of this rule. Moreover, the analysis has been advanced to reflect the more recent 15-year period of 1972 to 1986.

To arrive at a loss rate indicative of the cost of these accidents, the total financial loss of these accidents was divided into the total number of turbine-powered airplane air carrier operations for the same 15-year period of 1972 to 1986. This calculation established a loss rate of $4.34 per turbine-powered air carrier operation over the 15-year period of 1972 to 1986. Similarly, to estimate the future accident prevention value of this rule, the established loss rate was multiplied by the number of operations forecast for the 15 years from 1990 to 2004. This calculation reveals that the estimated potential discounted benefit associated with the prevention of casualty loss in accidents attributed to windshear to be $451.6 million.

The FAA has been unable to quantitatively estimate the accident prevention effectiveness of these amendments. The total discounted cost of compliance of these amendments can be fully recovered if the rule is only 55 percent effective in reducing future casualty loss. The FAA believes that enactment of these amendments will significantly reduce the number of future windshear incidents and accidents and that benefits will exceed costs.

This regulatory evaluation focused on the rulemaking it supported. There are other programs which are also designed to reduce the risk of wind-shear accidents. These other programs are justified partially by benefits included in this analysis, and additional benefits over and above those necessary to justify the rulemaking. FAA does not believe this rulemaking would eliminate or reduce the need for other programs such as terminal Doppler weather radar and Low-Level Wind Shear Alert Systems.

REGULATORY FLEXIBILITY DETERMINATION

The Regulatory Flexibility Act of 1980 requires a review of rules to assess their impact on small business. The required Part 121 amendments will have a significant economic impact on a substantial number of small entities. However, the FAA finds that there are no viable alternatives for small air carriers to adopt that would reduce the cost of compliance yet achieve the level of protection sought by this rulemaking. The amendments to Part 135 have been determined to impose only minimal costs. Therefore, Part 135 certificate holders would not incur a significant economic impact as a result of these amendments.

INTERNATIONAL TRADE IMPACT STATEMENT

These amendments will have little or no impact on trade opportunities of United States firms doing business overseas or for foreign firms doing business in the United States. These amendments apply only to Part 121 and Part 135 certificate holders and assign responsibility for the provision of the required equipment and windshear training programs specified in the rule to the operating certificate holder. Because most Part 121 and Part 135 certificate holders compete domestically for passenger and cargo revenues with other U.S. operators, this rule will not cause a competitive fare disadvantage for U.S. carriers.

FEDERALISM IMPLICATIONS

The regulations herein would not have substantial direct effects on the states, on the relationship between the National government and the states, or on the distribution of power and responsibilities among the various levels of government. Thus, in accordance with Executive Order 12612, it is determined that these regulations do not have federalism implications requiring the preparation of a Federalism Assessment.

PAPERWORK REDUCTION ACT APPROVAL

The recordkeeping and reporting requirements contained in this final rule (§ 121.358) have been submitted to the Office of Management and Budget for review since these provisions were not included in the notice of proposed rulemaking. Comments on these requirements should be submitted to the Office of Information and Regulatory Affairs (OMB), New Executive Office Building, Room 3001, Washington, D. C. 20503, Attention: FAA Desk Officer (Telephone 202-395-7340). A copy should be submitted to the FAA docket.

CONCLUSION

The FAA has determined that this amendment is not major under Executive Order 12291 but that it is significant under the Department of Transportation Regulatory Policies and Procedures (44 F.R. 11034, February 26, 1979). For the reasons discussed above, it also has been determined that the amendments to Part 121 will have a significant economic impact on a substantial number of small entities, but that the amendments to Part 135 will not have a significant economic impact on a substantial number of small entities.

The Rule

Accordingly, the Federal Aviation Administration amends Parts 121 and 135 of the Federal Aviation Regulations (14 CFR Parts 121 and 135) effective January 2, 1989.

The authority citation for Part 135 continues to read as follows:

Authority: 49 U.S.C. 1354(a), 1355(a), 1421 through 1431, and 1502; 49 U.S.C. 106(g) (Revised Pub. L. 97-449, January 12, 1983).

Amendment 135-28

Anti-Drug Program for Personnel Engaged in Specified Aviation Activities

Adopted: November 14, 1988 **Effective: December 21, 1988**

(Published in 53 FR 47024, November 21, 1988)

SUMMARY: This final rule sets forth regulations to require domestic and supplemental air carriers, commercial operators of large aircraft, air taxi and commuter operators, certain commercial operators, certain contractors to these operators, and air traffic control facilities not operated by the FAA or the U.S. military to have an anti-drug program for employees who perform sensitive safety- or security-related functions. A special provision has been added to the rule that provides that the final rule does not apply to any person where compliance with the final rule would violate the domestic law or policy of another country. Testing under the rule will be conducted by an employer prior to employment, periodically, randomly, after an accident, based on reasonable cause, and after an employee returns to duty to perform a sensitive safety- or security-related function for an employer. The final rule also will require that an employer provide EAP education and training services to employees and supervisors. The rule is necessary to prohibit an employee from performing a sensitive safety- or security-related function for an employer while that employee has a prohibited drug in his or her system or if that employee has used drugs as evidenced by a drug test showing the presence of drugs or drug metabolites. The rule is intended to ensure a drug-free aviation workforce and to eliminate drug use and abuse in commercial aviation.

FOR FURTHER INFORMATION CONTACT: Dr. Robert S. Bartanowicz, Acting Deputy Director, Office of Rulemaking (ARM-1), Federal Aviation Administration, 800 Independence Avenue, SW, Washington, DC 20591; telephone (202) 267-9679.

SUPPLEMENTARY INFORMATION:

Availability of Final Rule

Any person may obtain a copy of this final rule by submitting a request to the Federal Aviation Administration, Office of Public Affairs, Attn: Public Inquiry Center (APA-230), 800 Independence Avenue SW, Washington, DC 20591, or by calling (202) 267-3484. Requests must include the amendment number identified in this final rule. Persons interested in being placed on a mailing list for future rulemaking actions should request a copy of Advisory Circular 11-2A, Notice of Proposed Rulemaking Distribution System, which describes the application procedure.

Background

On December 4, 1986, the Federal Aviation Administration (FAA) issued an advance notice of proposed rulemaking (ANPRM) (51 FR 44432; December 9, 1986) entitled "Control of Drug and Alcohol Use for Personnel Engaged in Commercial and General Aviation Activities." The ANPRM invited comment from the public on drug and alcohol abuse by personnel in the aviation industry and the options available to the FAA for regulatory or other action in the interest of aviation safety. The FAA received over 650 written comments in response to the issues raised in the ANPRM.

On March 3, 1988, the FAA issued a notice of proposed rulemaking (NPRM)(53 FR 8368; March 14, 1988) entitled "Anti-Drug Program for Personnel Engaged in Specified Aviation Activities." The NPRM set forth an analysis of the comments received on the ANPRM and proposed regulations for public comment. The FAA received over 260 written comments on the proposals contained in the NPRM.

The FAA also held a series of public hearings on the regulations proposed in the NPRM. These hearings were held on June 2, 1988, in Washington, DC; June 7, 1988, in Denver, Colorado; and June 9, 1988, in San Francisco, California. Each of the hearings was recorded by a court reporter. The transcript of each hearing and any statements or other material, submitted to the hearing panel during the hearings, have been placed in the public docket. This material also has been reviewed in the development of the final rule.

Current Rules. The FAA's comprehensive anti-drug program is one action in a long history of actions to combat the use of drugs and alcohol in the aviation industry. The focus of the majority of these actions has been on commercial aviation personnel, particularly the cockpit and cabin crew. For example, pilots, flight attendants, flight engineers, and flight navigators may not act as a crewmember of a civil aircraft within eight hours after drinking an alcoholic beverage; while under the influence of alcohol; with 0.04 percent, or more, alcohol in their blood; or while using any drug that affects their faculties in any way contrary to safety. Also, crewmembers may be tested in the context of receiving medical care immediately after an accident. When there is a reasonable basis to suspect that one of these individuals has violated any of the above restrictions, these crewmembers must furnish, to the FAA, the results of any test taken within four hours of acting, or attempting to act, as a crewmember that indicates the presence of alcohol or any such drug in the person's system. Moreover, pilots, flight attendants, flight engineers, and flight navigators are required to submit to a test to indicate the percentage of alcohol in the blood when requested by a law enforcement officer who suspects that a crewmember may have violated a State or local law governing the operation of an aircraft while under the influence, or impaired by, drugs or alcohol.

The FAA may deny an application for a certificate or rating for up to one year, or may suspend or revoke an existing certificate or rating, in the case of any pilot, flight engineer, or flight navigator who has been convicted of violating a Federal or State law relating to drug trafficking or possession; who has violated the proscriptions described above; who has refused to furnish the results of any test that would indicate the presence of alcohol or drugs taken within four hours of acting, or attempting to act, as a crewmember; or who has refused to submit to an alcohol test requested by a law enforcement officer investigating violations of State or local laws. The FAA also may deny an application for a certificate or rating for up to one year, or may suspend or revoke an existing certificate or rating, in the case of any air traffic control tower operator, aircraft dispatcher, mechanic, repairman, or parachute rigger who has been convicted of a violation of a Federal or State law relating to drug trafficking or possession.

The Aviation Drug-Trafficking Control Act of 1984, which added language to § 602 and § 609 of the Federal Aviation Act of 1958, mandates that the FAA take certain actions regarding airmen involved in drug trafficking activities. The Administrator is required to revoke the airman certificate of any airman who has been convicted of violating any Federal or State law relating to a controlled substance, other than simple possession, if an aircraft was used in, or was used to facilitate, the commission of the offense and the person served as an airman, or was onboard the aircraft, in connection with the commission of the offense. The Administrator has no discretion to review the conviction for the substantive offense. Under the 1984 legislation, the Administrator was prohibited from reissuing a certificate to that airman for up to five years but could reissue a certificate after an absolute minimum of one year, in certain extremely limited circumstances, if revocation was excessive and contrary to the public interest. As part of the Federal Aviation Administration Drug Enforcement Assistance Act of 1988, Congress amended § 602 and § 609 of the FAAct, among other amendments to the Act, in October 1988. The statutory language now provides that the Administrator shall not issue an airman certificate to any person whose certificate has been revoked for aviation drug trafficking activities unless the airman is acquitted of the offense, a conviction upon which revocation is based is reversed on appeal, or the Administrator determines that issuance of an airman certificate will facilitate law enforcement efforts after a request from a Federal or State law enforcement official. The final rule requiring a comprehensive anti-drug program for employees in commercial aviation is consistent with these previous actions taken by the FAA.

The FAA's commitment to a drug-free workforce also applies to its own employees. The Department of Transportation began random drug testing of DOT employees in safety- and security-sensitive functions in September 1987. The Secretary's goal is to establish and maintain a drug-free workplace as intended by Executive Order 12564 and as directed by Presidential memorandum dated October 4, 1986. It is the opinion of the Department of Transportation that random drug testing is the most effective means of determining the presence of drugs or drug metabolites that may adversely affect an employee's performance of safety- or security-sensitive job functions. Pursuant to the Department's program, an employee of the Department will be removed from Federal service under several circumstances: refusal to enter or to successfully complete a drug rehabilitation or abatement program; repeat usage of drugs; refusal to provide a urine specimen for drug testing; adulteration or substitution of a urine specimen; on-duty use of illegal drugs; or a determination that a DOT employee has engaged in illegal drug trafficking.

In order to ensure that aviation safety is not compromised by a failure to detect drug users in the aviation industry, the FAA believes that it is appropriate and necessary to establish a comprehensive anti-drug program at this time.

Existing Industry Programs. As part of their comments to the ANPRM and the NPRM, many employers note that they have implemented drug testing programs or employee rehabilitation programs For example, although their drug testing programs were not specifically described, Martin Aviation implemented a drug testing program in February 1987 and Suburban Airlines has required preemployment drug testing of flight crew applicants for over a year. Federal Express Corporation currently conducts preemployment testing of all applicants and "reasonable suspicion testing" of all employees.

Tramco, Inc. is a certificated repair station employing over 600 individuals and repairing over 100 aircraft per year. Tramco instituted a drug testing and counseling program "several years ago" and believes that the program yields substantial benefits to both employees and employers. Tramco tests all applicants for jobs and conducts tests based on probable cause. Tramco's tests based on probable cause are triggered by reports of employee drug use, employee attendance patterns that may suggest a drug problem, accidents, and observation by supervisors. A Tramco employee who tests positive for drugs is suspended for a minimum of one week and may not return to work until a drug test shows no evidence of drug use. Tramco estimates that, consistent with general statistics, 20 percent of its workforce has had some involvement with controlled substances. As of the time of its comment to the NPRM, Tramco identified 10 percent of its employees as individuals who had used drugs.

Rocky Mountain Helicopters, Inc. implemented a drug testing program for its employees in July 1986. Rocky Mountain Helicopters tests all pilots, mechanics, managers, and others who can affect aviation safety using preemployment, random, probable cause, and postaccident testing. Rocky Mountain Helicopters does not pay an employee's rehabilitation costs but will consider rehiring any employee who completes an approved rehabilitation program. Petroleum Helicopters, Inc. began a preemployment and periodic testing program in 1982 and supports mandatory drug testing. Petroleum Helicopters denies employment to any applicant, and discharges any employee, who tests positive in a drug test. Petroleum Helicopters does not concur with the proposal to provide a rehabilitation opportunity to employees on the basis that an employer should not accept the risk of repeated illegal drug use among maintenance or flight personnel.

The FAA believes that the comprehensive anti-drug program, promulgated by this final rule, is not a novel concept. In light of the FAA's long history of regulatory action in the area of drug use in aviation and the significant number of industry drug testing programs currently implemented by aviation employers, the FAA believes that the agency is justified in requiring the commercial aviation industry to implement similar comprehensive anti-drug programs.

DISCUSSION OF COMMENTS:

General Overview of the Major Issues

The FAA received 261 comments in response to the NPRM. The FAA considered all timely-filed comments submitted in response to the NPRM and the testimony of 20 individuals who presented statements at the three public hearings held by the FAA. During the public hearings, the Secretary of Transportation, James H. Burnley, requested information from several individuals who presented statements at the hearings. The comment period for the NPRM closed on June 13, 1988. In order to accommodate the individuals who submitted supplemental information pursuant to the Secretary's request, the FAA also considered comments that were submitted as late as July 1, 1988.

There were several major themes presented by the commenters. Many commenters focus on the lack of evidence of significant drug use or drug abuse in the aviation industry. The commenters particularly stress this point with respect to the cockpit crew based on age, income, managerial supervision, close working relationships with peers, periodic medical exams to determine fitness for duty, and professionalism of the crew. Based on the lack of evidence, these commenters conclude that establishment of a drug testing program is unwarranted and unconstitutional. Regardless of the amount of evidence, the majority of commenters agree with the FAA's assessment that drug use and substance abuse have no place in the aviation environment. Some commenters note that the FAA's anti-drug stance is commendable, but the true issue is the type of program that evolves from that stance. Many commenters support the FAA's efforts to develop a comprehensive anti-drug program that would achieve a drug-free commercial aviation workforce and agree that a program to achieve a drug-free aviation environment is beneficial.

There is substantial, although not universal, support for a drug testing program using state-of-the-art urine testing. The gas chromotography/mass spectrometry (GC/MS) method, approved by the Department of Health and Human Services (DHHS), is recognized by the commenters as the most accurate method of analysis for the presence of drugs or drug metabolites in urine if rigorous collection and analysis procedures, such as those contained in the DHHS mandatory guidelines, are followed. (As discussed in detail elsewhere in this preamble, the Department of Transportation is publishing "Procedures for Transportation Workplace Drug Testing Programs" which are adopted in this final rule in lieu of the DHHS guidelines. These DOT-wide procedures closely resemble the DHHS guidelines and are used because the DHHS guidelines are not drafted for application by entities other than Federal agencies.) While some concerns were raised about the testing procedures, these concerns generally involve drug testing programs and procedures in the early 1980s that did not embody the critical safeguards of a properly-administered testing program.

Certain types of testing proposed in the NPRM receive significant support by the commenters. These types of testing include preemployment testing and postaccident testing. Periodic testing and testing based on reasonable cause received substantial support from the commenters. Some support for testing based on reasonable cause is predicated on traditional constitutional standards that apply to a search of the person.

There is significant and strongly-held opposition to random testing. However, the FAA's drug testing program, including random testing as a critical element, is supported by some commenters. The objections to random testing are based on legal or constitutional issues, privacy issues, and the invasive nature of random testing based on personal grounds, cost issues, and the absence of a demonstrated need for a comprehensive testing program assuming a low level of drug use in the industry.

Of those commenters who address the issue, there is agreement that the complexity, cost, and operational impact burdens of the rule would be significantly greater on small entities in the aviation industry. Finally, the commenters express significantly different opinions in the area of employee assistance programs (EAP). The primary differences surround the issues of the circumstances under which an employee is offered an opportunity for rehabilitation and the entity or individual who is responsible for payment of rehabilitation costs. Several major air carriers have already addressed this issue through insurance coverage or by labor-management agreement. However, even some of these organizations, although supportive of EAPs, oppose a broad, Federally-mandated EAP requirement. Labor organizations clearly support expansive EAP opportunities and services. Small entities oppose EAP requirements on many grounds, including cost and possible negative coworker attitudes exhibited toward rehabilitated employees.

The commenters differ regarding the method of achieving a drug-free aviation workforce and the manner in which the FAA would be involved in any program. The primary differences arise regarding the type and scope of testing used to identify sensitive safety- or security-related personnel who use drugs and the choices offered to those individuals who are identified as drug users.

Labor Unions and Organizations Representing Employees. In general, unions or organizations representing employees in aviation oppose the comprehensive mandatory drug testing proposed in the NPRM. Labor unions and employee organizations favor EAP and broad rehabilitation rights for all employees. These organizations oppose random drug testing but, with some qualifications, these organizations see a role for preemployment testing, postaccident testing, testing based on reasonable cause, and testing during and after rehabilitation to monitor an individual's progress.

The International Association of Machinists and Aerospace Workers (IAM) opposes any industry-wide drug and alcohol testing until hard evidence of an industry drug problem that jeopardizes aviation safety is substantiated and documented. The Independent Union of Flight Attendants (IUFA) opposes all forms of mandatory drug testing of employees. The Independent Federation of Flight Attendants (IFFA) objects generally to drug testing as unwarranted governmental intervention into labor-management relations but would support preemployment screening and postaccident testing if reasonable cause for such testing can be objectively illustrated. IFFA objects specifically to random testing in any form as unconstitutional and contrary to labor law. IFFA believes that the focus of any drug testing program should be limited to impairment on the job and states that no currently available testing procedure can determine drug impairment on the job. The Association of Flight Attendants (AFA) believes that drug testing of flight attendants is not warranted. However, AFA and the Association of Professional Flight Attendants (APFA) support preemployment testing of applicants seeking jobs in the industry if that testing is not used to discriminate against applicants on the basis of disabilities unrelated to drug use. AFA also would not oppose postaccident testing of pilots or probable cause drug testing of employees who are under the influence of drugs if these samples were collected by an FAA inspector. APFA opposes random testing, postaccident testing absent individualized suspicion, and testing based on reasonable cause as proposed. The Flight Engineers' International Association (FEIA) opposes all testing except in the case where probable cause exists to believe that an employee is impaired by drugs; in order to protect employees from harassment, FEIA states that any determination to test an employee based on probable cause for impairment should be reviewed by a neutral party. The Teamsters Union could support preemployment screening; testing based on reasonable suspicion to believe that an employee's actual or current impairment has, or is, affecting job performance or workplace safety; periodic testing to maintain medical certification; and testing after an accident or a "near miss" if there is a reasonable basis to suspect that human error may have been a causal factor.

The Air Line Pilots Association (ALPA), representing 41,000 pilots employed by 44 large and small airlines, is firmly opposed to all forms of drug and alcohol abuse by airline personnel. ALPA primarily is opposed to random and periodic testing based on their belief that these tests are offensive, ineffectual, unjustified, and unconstitutional. ALPA believes that if there is drug use among commercial pilots, the incidence of drug use would be less than 0.5 percent. On this basis, ALPA asserts that widescale random testing of the relatively small aviation population will result in a significant number of false-positive test results. ALPA does not oppose testing prior to employment, testing after an accident, testing in circumstances where there are reasonable grounds to suspect drug use, and testing to monitor rehabilitation.

ALPA believes that the approach to the drug abuse problem articulated in the NPRM is inappropriate. ALPA instead urges the FAA to consider an approach similar to the Human Intervention Motivation Study (HIMS) program developed to identify and treat alcoholism among pilots. The key elements of the HIMS program are education, peer involvement, intervention, confrontation, and rehabilitation. Although the HIMS program has focused on treatment of pilots who demonstrate a problem with alcohol, ALPA sponsored a HIMS drug abuse training program in November 1987 which the FAA attended.

Labor and employee organizations also strongly support limitations on an employer's ability to exclude any employee from an opportunity for rehabilitation and limitations on an employer's ability to discharge an employee. Most organizations, including IUFA, IFFA, AFA, and APFA, strongly support regulations that would require an employer to establish and participate in comprehensive, nonpunitive EAP services established by collective bargaining or negotiation and available to all employees. ALPA agrees that any regulations should clearly recognize that unions have collective bargaining rights under Federal labor laws; ALPA suggests that any anti-drug regulation promulgated by the FAA should ensure that the regulatory requirements do not interfere or override the union's collective bargaining rights. FEIA supports EAP services, mandatory for each carrier and paid for by the carrier, for rehabilitation of all employees regardless of the circumstances that precipitated a drug test. IAM suggests that FAA regulations should be guidelines, applicable only to carriers who have a documented substance abuse problem affecting aviation safety, that stress education, prevention, rehabilitation, and protection of an employee's privacy.

Employers and Organizations Representing Employers. Most employers support mandatory drug testing of employees and limitations on an employee's opportunity for rehabilitation. Part 121 and Part 135 certificate holders do not express the same opinions regarding the proposals in the NPRM. The general views held by Part 121 certificate holders are characterized by the comments submitted by the Air Transport Association of America (ATA). ATA supports the FAA's comprehensive drug testing program and favors an opportunity for rehabilitation only for those employees who volunteer for rehabilitation. In the area of EAP services, Part 121 certificate holders generally favor flexibility and latitude for an employer to design a company EAP. American Airlines, however, favors industry-wide standard EAP requirements.

Most Part 135 certificate holders and small aviation businesses object to the drug testing requirements proposed in the NPRM. The Regional Airline Association (RAA), which represents many Part 135 certificate holders, opposes random testing; RAA also suggests that the random selection rate be set at a rate less than the maximum 125 percent rate proposed in the NPRM if the FAA mandates a random testing requirement. The primary objection of Part 135 certificate holders and small businesses is to the proposed requirement to offer an opportunity for rehabilitation to an employee. These organizations oppose mandated rehabilitation because of the economic burden that would be imposed on a small operator. The National Air Transport Association (NATA) suggests, in its June 2, 1988 testimony, that Part 135 certificate holders employing 100 or fewer covered employees should be exempted from all requirements of the proposed anti-drug program.

Grace Flying Service, Inc., a Part 135 certificate holder conducting single-engine air taxi services, flight instruction, and aerial application services, opposes drug testing of employees. Grace Flying Service strenuously objects to any drug tests, whether scheduled or random, and would be reluctant to test its employees even if testing is mandated by the FAA.

The National Business Aircraft Association (NBAA) concurs with the FAA's anti-drug program with certain reservations. NBAA primarily is concerned about the constitutionality of random drug testing and the FAA's reliance on laboratory testing results that may be unreliable in detecting drugs or drug metabolites proposed to be analyzed in the NPRM.

Individual Commenters. The FAA received 170 comments from individuals. The majority of these individuals are pilots employed by major airlines and self-employed pilots who would be subject to the requirements of the proposed rule. The FAA also received comments from general aviation pilots and individuals who are not employed in the commercial aviation industry. The vast majority of the individual commenters oppose the drug testing requirements of the proposed rule based on constitutional objections, failure of the FAA to demonstrate a drug problem in the aviation community, and perceived inaccuracies of drug testing collection and analysis. A minority of individual commenters generally support the FAA's anti-drug proposals and primarily support the testing requirements. These individuals are private citizens or consumers who base their support on the need to ensure that aviation personnel are drug free, particularly on the job. The strongest individual support is expressed by letters from the family and friends of a passenger who was killed in the crash of Continental Air Express Flight 2286 near Durango, Colorado. The comments from the family and friends of the deceased passenger urge the FAA to do everything within its statutory authority to prevent a similar tragedy in the future.

SPECIFIC ISSUES

Discussion of the constitutional issues regarding random and periodic drug testing

A number of commenters have questioned the constitutionality of drug testing programs for aviation personnel. Although the state of the case law is still evolving in rapid fashion and no definitive Supreme Court resolution of many relevant and complex issues has been achieved, the FAA feels confident that testing required under this rule will pass constitutional scrutiny. The FAA recognizes that there are legitimate and significant constitutional concerns surrounding drug testing in general and random drug testing as a specific component of drug testing. The FAA acknowledges the current widescale litigation and apparent disparate judicial opinions on drug testing programs.

FAA Response. The principles of the Fourth Amendment to the U.S. Constitution are paramount in scrutinizing the fundamental legality of many drug testing programs. As a threshold legal matter, the Fourth Amendment applies to "searches" conducted or mandated by the government and protects individuals against "unreasonable searches and seizures." Action of a private party does not constitute State (or Federal) action unless there exists a close nexus between the state and the action in question. *Jackson v. Metropolitan Edison*, 419 U.S. 345 (1974); *Moose Lodge No. 107 v. Irvis*, 407 U.S. 163 (1972).

Assuming that the drug testing programs called for under the final rule do implicate the government, a second issue then arises concerning whether urine tests under these programs are "searches" within the meaning of the Fourth Amendment. Although most courts to address the issue to date have ruled that toxicological testing of employees for the purpose of determining fitness for duty is a search within the meaning of the Fourth Amendment, the issue is not entirely settled. *See Wyman v. James*, 400 U.S. 309, 317-338 (1971) (government welfare caseworker's "home visit" as a precondition for assistance payments is not a Fourth Amendment search). *See also, Lovvorn v. City of Chattanooga*, 846 F.2d 1539, 1553-1554 (6th Cir. 1988) (Guy, J., dissenting), *panel decision vacated and rehearing en banc ordered*, (August 3, 1988); *National Treasury Employees Union v. von Raab*, 808 F.2d 1057, 1060, 1062 (5th Cir. 1987) (Higginbotham, J., concurring). *Cf. Mack v. United States, F.B.I.*, 814 F.2d 120, 125 n.2 (2nd Cir. 1987).

Also assuming, *arguendo*, that urine tests of aviation personnel for illegal drugs are "searches" within the meaning of the Fourth Amendment, it is clear that while searches ordinarily must be conducted pursuant to a warrant issued on probable cause grounds, such a requirement is not always necessary. *Almeida-Sanchez v. United States*, 413 U.S. 266, 277 (1973)(Powell, J., concurring). Where, for example, ". . .the burden of obtaining a warrant is likely to frustrate the governmental purpose behind the search. . .," [*Camera v. Municipal Court*, 387 U.S. 523, 533 (1967)], the Supreme Court has routinely held that a warrant is not required by the Fourth Amendment. *See e.g.*, *Griffin v. Wisconsin*, 107 S.Ct. 3164, 3167 (1987); *New Jersey v. T.L.O.*, 469 U.S. 325, 340 (1985). The Supreme Court has likewise found that the probable cause standard is inappropriate where it would defeat the purpose that the search is designed to achieve. *See e.g., New Jersey v. T.L.O.*, 469 U.S. at 340-342; *O'Connor v. Ortega*, 107 S.Ct. 1492, 1501-1502 (1987) (plurality opinion) (upholding the search of a public employee's office for work-related noninvestigatory reasons on less than probable cause grounds); *United States v. Martinez-Fuerte*, 428 U.S. 543, 560-561 (1976) (footnotes omitted) (while ". . .some quantum of individualized suspicion is usually a prerequisite to constitutional search or seizure[,] . . . the Fourth Amendment imposes no irreducible requirement of such suspicion").

Rather, "[t]he fundamental command of the Fourth Amendment is that searches and seizures be reasonable . . ." *New Jersey v. T.L.O.*, 469 U.S. at 340. In determining the reasonableness of a search, the Supreme Court has repeatedly stressed the importance of the facts particular to the search while acknowledging that the test of reasonableness ". . .is not capable of precise definition or mechanical application." *Bell v. Wolfish*, 441 U.S. 520, 559 (1979). In analyzing a drug testing program, ". . .what is reasonable depends on the context within which a search takes place." *New Jersey v. T.L.O.*, 469 U.S. at 337.

In scrutinizing whether particular searches comport with the Fourth Amendment, courts have adopted a balancing test. In general, to support a claim that a search of an individual or the individual's property is reasonable, the government must demonstrate that, on balance, the public's legitimate interest in conducting the search outweighs the individual's legitimate expectation of privacy. *See e.g., United States v. Montoya de Hernandez*, 473 U.S. 531, 537 (1985); *United States v. Villamonte-Marquez*, 462 U.S. 579, 588 (1983); *Delaware v. Prouse*, 440 U.S. 648, 654 (1979). Thus, the courts must ". . .consider the scope of the particular intrusion, the manner in which it is conducted, the justification for initiating it, and the place in which it is conducted." *Bell v. Wolfish*, 441 U.S. at 559.

Viewed in this light, it is beyond dispute that the public has an overriding interest in assuring that sensitive safety- and security-related aviation personnel perform their duties free of illegal drugs. The drug problem in society in general and evidence of drug use in the aviation industry in particular are documented elsewhere in the preamble of this final rule. The impairing effects of illegal drugs and the substantial risks to public safety posed by aviation employees who use illegal drugs underlies the compelling governmental interests in promulgating this final rule.

In contrast, the drug testing requirements of the final rule involve a minimal invasion of privacy. As the Supreme Court has indicated, where searches are undertaken in situations where individualized suspicion is lacking, other safeguards must be relied upon to ensure that the discretion of the party conducting the search is properly defined and the scope of the search is limited. *See Delaware v. Prouse*, 440 U.S. at 654-655 (footnote omitted); *New York v. Burger*, 107 S.Ct. 2636, 2648 (1987). The drug testing requirements of the final rule place significant constraints on an employer's discretion in conducting drug testing. For example, the requirement for random drug testing calls for selection of an employee to be tested in a scientifically-acceptable manner, such as use of a computer-based random number generator. Requirements for testing based on reasonable cause or postaccident testing also are severely circumscribed in order to limit an employer's discretion in administering such tests to employees. Also, the FAA will review the actual employer anti-drug programs, required to be submitted to the agency in accordance with provisions of the final rule, to ensure that discretion is in fact limited in the administration of drug tests under these programs. *Cf. National Treasury Employees Union v. Reagan*, No. 86-4058, slip op. at 14 (E.D.La. April 29, 1988) (holding that the constitutionality of Executive Order requiring Federel agencies to establish drug testing programs for Federal employees was not ripe for review since each agency had not implemented a finalized, particular plan).

The actual testing procedures that each employer is required to implement under this final rule also are tailored narrowly to respect an employee's reasonable expectation of privacy. The DOT procedures governing collection of urine samples, which are based on the DHHS guidelines, are carefully designed to preserve privacy while protecting the integrity of the sample. The final rule contains a number of important employee safeguards, including privacy during collection under the majority of circumstances, stringent laboratory safeguards, and provisions for challenging results. Other employee drug testing programs incorporating the collection and testing procedures of the DHHS guidelines have been upheld against constitutional attack. The DOT procedures so closely resemble the DHHS guidelines in all pertinent respects that the Department of Transportation is confident that these procedures also will be upheld. *See American Federation of Government Employees v. Dole*, 670 F.Supp. 445 (D.D.C. 1987), *appeal docketed*, No. 87-5417 (D.C.Cir. Dec. 11, 1987)(upholding the constitutionality of the Department of Transportation program for random drug testing of safety- and security-sensitive agency employees); *National Association of Air Traffic Specialist v. Dole*, 2 Ind.Emp.Rts. Cases (BNA) 68 (D.Alaska 1987) (denying a motion for a preliminary injunction against the FAA's use of urinalysis drug testing as part of an annual physical examination of the agency's air traffic specialists).

Equally significant is the fact that urine drug testing of sensitive safety- and security-related employees is to be conducted in the "context" of the employment relationship. As the Supreme Court has pointed out, "[t]he operational realities of the workplace . . . may make *some* employees' expectation of privacy unreasonable." *O'Connor v. Ortega*, 107 S.Ct. at 1498. This is particularly important in circumstances where the employee works in an industry in which his or her activities are subject to extensive regulation. Thus, persons who work in such "closely regulated" industries have a "reduced expectation of privacy" [*New York v. Burger*, 107 S.Ct. at 2646] and, "in effect consent[] to the restrictions placed upon them" [*Almeida-Sanchez v. United States*, 413 U.S. at 271]. For these very reasons, two Federal courts of appeals have upheld urinalysis testing, in the absence of particularized suspicion, in industries where pervasive regulation has reduced an employee's expectation of privacy. *See Rushton v. Nebraska Public Power Dist.*, 844 F.2d 562, 566 (8th Cir. 1988) (nuclear plant operators); *Shoemaker v. Handel*, 795 F.2d 1136, 1142 (3rd Cir.), *cert. denied*, 479 U.S. 986 (1986) (jockeys); *Policemen's Benevolent Ass'n, Local 318 v. Township of Washington*, 850 F.2d 133 (3rd Cir. 1988) (police officers).

It is beyond dispute that aviation has always been subject to pervasive regulation by the government and by employers themselves. As one Federal district court has noted:

> [t]he rationale of the Third Circuit upholding drug urinalysis for jockeys in order to protect the integrity of horse racing is even more compelling when the public need for air safety is considered. If horse racing is recognized as a closely or pervasively regulated activity, then aviation activities and the aviation industry are as much or possibly more closely regulated.
>
> Indeed, the creation of a federal agency charged with the responsibility for ensuring safe air travel reflects the public interest in air safety. . . .[T]he public perception of air safety not only is critical to the airline industry but to all who fly. . . .[C]lose and pervasive regulation of aviation related activities is well established and . . . air safety relates to serious risks or hazards which require close and constant attention. *National Association of Air Traffic Control Specialists v. Dole*, 2 Ind.Emp.Rts. Cases (BNA) at 78.

The FAA recognizes that a number of Federal and State courts have rejected government-mandated drug testing program on Fourth Amendment grounds. However, even courts striking drug resting programs have recognized that drug testing is appropriate in other contexts. *See e.g., Lovvorn v. City of Chattanooga*, 846 F.2d at 1553-1554 (Martin, J.) ("When determining, then, whether a mandatory drug search is 'reasonable,' we believe that, as the costs to society of an impaired employee increase, the requisite level of suspicion that a drug problem exists decreases."); *Policemen's Benevolent Ass'n, Local 318 v. Township of Washington*, 672 F.Supp. 779, 792 (D.N.J. 1987), rev'd, 850 F.2d 133 (3rd Cir. 1988) ("[T]he need to prevent a major airline disaster presents a far more compelling rationale than those presented by the municipality in support of testing its police officers."); *American Federation of Government Employees v. Meese*, No. C-88-1419-SAW (N.D.Cal. June 16, 1988) (issuing a preliminary injunction against a Bureau of Prison plan to test randomly all agency employees but nonetheless noting that "[t]here are cases in which compulsory drug testing may be justified in the interest of public safety or security." Memorandum opinion at 2).

The FAA also is aware of the recent Ninth Circuit decision holding unconstitutional regulations promulgated by the Federal Railroad Administration—mandating blood and urine tests of railroad employees who are involved in certain train accidents and fatal incidents and authorizing breath and urine tests after certain accidents, incidents, and rule violations-because the rules do not require a showing of "particularized suspicion" of drug or alcohol impairment prior to testing. *Railway Labor Executives' Association v. Burnley*, 839 F.2d 575 (9th Cir.), *cert. granted*, 108 S.Ct. 2033 (1988). The Ninth Circuit based its views, in part, on the proposition that ". . .the vast bulk of [railroad] safety regulation is directed at owners and managers of railroads, not employees." *Id.* at 585. The U.S. government disagrees with the Ninth Circuit panel's decision, which is contrary to rulings in other Federal appellate courts. Moreover, contrary to the Ninth Circuit's views of the Federal Railroad Administration's jurisdiction over railroad employees, FAA's jurisdiction over employees in the aviation industry is clear and should not be subject to challenge on this basis.

The Supreme Court has granted the government's petition for a *writ of certiorari* in *Railway Labor Executives' Association v. Burnley* and has ordered that this case be argued this term "in tandem" with *National Treasury Employees Union v. von Raab*, 816 F.2d 170 (5th Cir. 1987), *cert. granted*, 108 S.Ct. 1072 (1988) (upholding drug testing of applicants for critical safety or security sensitive positions in the U.S. Customs Service). Decisions in these cases may not be forthcoming until the spring of 1989. However, in the absence of Supreme Court guidance, the FAA remains convinced that the need for drug testing by urinalysis in the aviation industry to determine fitness for duty of sensitive safety- or security-related employees and, thereby, to ensure public safety clearly outweighs the privacy interest of individuals in this class.

While not totally free from doubt, it is the opinion of the Department of Transportation that the FAA's anti-drug program, and similar regimens proposed by other administrations within the Department, will be determined to be constitutional. The critical need for properly-administered drug testing to ensure that employees in the transportation industry do not have drugs or drug metabolites in their system while performing sensitive safety- and security-related functions outweighs the reduced privacy interest of these employees.

Lack of Evidence of a Drug Problem in the Aviation Industry

Nearly every commenter who opposes drug testing in general, and random testing in particular, and even commenters who support the comprehensive drug testing proposals, raise the issue of lack of evidence of a drug problem in commercial aviation. On this basis, the commenters assert that the FAA can not justify the comprehensive proposals contained in the NPRM. ALPA, the Aircraft Owners and Pilots Association, (AOPA), and the organizations representing flight attendants maintain that the industry should police itself in the area of drug use and abuse.

FAA Response. The FAA made no attempt to obscure the lack of widespread evidence of drug use or abuse among commercial aviation personnel. However, after publication of the NPRM in the *Federal Register* on March 14, 1988, federal investigators released preliminary data showing that the captain of Continental Air Express Flight 2286, which crashed in Durango, Colorado on January 19, 1988, may have been impaired by drugs while operating the aircraft. A preliminary report of the National Transportation Safety Board (NTSB) indicates that toxicological test results show that the captain of Flight 2286 had cocaine and a cocaine metabolite in his system at the time of the crash. Seven passengers and the pilot and copilot died in the accident.

In 1983, the NTSB issued an Aircraft Accident Report (NTSB/AAR-84/11) on the crash of Central Airlines Flight 27 in Newark, New Jersey, on March 30, 1983. The NTSB determined that the probable cause of the crash of the Gates Learjet nonscheduled, cargo-carrying aircraft included "impairment of the flight crew's judgment, decisionmaking, and flying abilities by a combination of physiological and psychological factors." The NTSB did not conclude that drug-impaired performance was the sole cause of the crash. However, the report does state that test results indicate that the captain had used marijuana and the copilot had used, or been exposed to, marijuana within the 24 hours preceding the crash. Also, toxicological tests indicate that the copilot's urine showed evidence of contra-indicated use of an antihistamine drug.

Additional evidence of illegal drug use by individuals employed in the airline industry appeared in the fall of 1986, when a series of articles in the Pittsburgh Press, based on interviews with emergency room staffs at area hospitals, highlighted 23 cases of airline flight crew drug abuse. Twenty of those cases involved cocaine overdoses, two were heroin reactions, and one dealt with valium and alcohol. Twelve cockpit crewmembers and eleven cabin crewmembers were among those treated by Pittsburgh area hospitals for drug use. Personnel at those hospitals also indicated that they had treated numerous case of drug abuse among non-flight employees, such as mechanics. The Pittsburgh Press also surveyed

17 drug treatment clinics across the country and found that more than 69 pilots had been treated for cocaine addiction. A subsequent FBI investigation of drug use in the Pittsburgh area produced evidence that a number of airline employees, including cockpit, cabin, and ground crewmembers, had used cocaine, marijuana, and other illegal drugs, sometimes on duty or shortly before reporting for duty.

The NPRM also included comments by a Part 121 and Part 135 certificate holder that implemented an unannounced drug testing program applicable to its employees. This company reported that 2.5 percent of its 180 pilots and 4 percent of its 240 mechanics tested positive for a trace, or more, of illegal drugs in their system. Data from the airline industry regarding preemployment screening of applicants for various positions indicate that the number of positive drug tests ranges from 4.2 percent to 20 percent with results as high as 25 percent to 30 percent in some geographical locations.

Although this data does not show an overwhelming drug problem in commercial aviation, it does show concrete evidence of drug use in the commercial aviation sector. The FAA recognizes that commercial aviation personnel operate in a professional and highly-regulated environment. However, pursuant to the FAA's statutory mandate to ensure aviation safety, the FAA also must acknowledge that commercial aviation personnel are not immune to, nor insulated from, drug use or abuse that may affect safety-critical job performance. The FAA believes that any drug use in commercial aviation warrants preventive and proactive intervention by the FAA to ensure aviation safety. The FAA believes that this view is not inconsistent with the increasing awareness of several aviation employers who currently have, as disclosed in their comments, basic drug testing and employee rehabilitation programs for their employees.

Although not a universally-expressed opinion among the commenters, ATA "fully embrace[s] the philosophy, expressed in the NPRM, that individuals who wish to work in aviation activities that involve the safety of passengers, co-workers, and others must not use illicit drugs, even while off-duty." Several commenters, including RAA, note that to the extent any drug use is occurring in the aviation industry, it is a "safety issue and it is well within the purview of the FAA to develop a comprehensive, nationally applicable set of regulations." The Equal Employment Advisory Council (EEAC) believes that the workplace is an appropriate environment to intervene in the process of individual substance abuse. EEAC also believes that the FAA has correctly concluded that the purpose of drug testing is not to determine that an employee is impaired by drugs at the time of testing. Instead, testing is used to enable an employer rationally to determine if an employee has used drugs and to conclude reasonably that there is a possibility of future impairment based on subsequent use.

Comments that the Proposed Rules are Politically-Motivated

The FAA received many comments that state that the comprehensive anti-drug program proposed by the FAA is based solely on political perceptions and goals. The commenters stress that DOT and the FAA have surrendered to the public hysteria over drug use and unfavorable press reports of drug use in the aviation industry.

FAA Response. Because this issue is raised so frequently by the commenters, the FAA chooses to address these comments although they are beyond the scope of the rulemaking. The war against drugs is one of this Administration's top priorities. Also, Congress has enacted a substantial amount of legislation to address the use, distribution, importation, and interdiction of drugs in the United States and is considering enactment of additional legislation. Moreover, a significant number of public opinion polls indicate that the American public is deeply concerned about the effect of drug use by individuals in critical safety occupations, including aviation. The fact that the Administration, Congress, and the public are concerned about drug use is noteworthy. However, the FAA is issuing the comprehensive anti-drug program in this final rule because it is consistent with the FAA's statutory duty to promulgate minimum standards to ensure and promote aviation safety.

DHHS Guidelines

The FAA received numerous comments, including comments from drug testing laboratories and companies supplying drug testing equipment, on the guidelines for drug testing promulgated by the Department of Health and Human Services (DHHS). Many of the commenters state that the certification requirements for drug testing laboratories are too rigid because the DHHS guidelines require laboratories to have the capability to do both initial and confirmation testing at the same laboratory site. The Director of the Santa Maria Public Airport District and Psychemedics Corporation, a commenter at the San Francisco public hearing, suggest that the FAA use analysis of hair, in lieu of urinalysis testing, to test for drugs on the basis that hair analysis may be more accurate and more reliable. Psychemedics Corporation proposes that analysis of hair samples would produce more complete results because hair contains a "longitudinal" history of drug use that could reveal drug use in excess of 90 days before analysis. This commenter also notes that the two-step process of immunoassay and GC/MS analysis would still be used; the only change would be the material that was analyzed. Federal Express strongly opposes implementation of the DHHS guidelines because they are overly-burdensome on carriers with operations in multiple locations.

Some commenters also state that a split sample should be obtained from each individual in order to ensure the accuracy of the analysis. Several commenters raise the issue that specimens may be used by an employer to test for physiological states, including epilepsy and pregnancy, to discriminate against applicants and employees. A few commenters consider the requirement of "monitored" specimen collection, whether by listening to or directly observing an individual, to be embarrassing and intrusive.

The AMA opposes the proposal to require employers to comply with the DHHS guidelines. The AMA states that these requirements would result in an undue hardship on aviation medical examiners who must comply with chain-of-custody procedures designed to ensure the integrity of the specimen.

The NTSB strongly concurs in the requirement that drug testing laboratories that analyze specimens pursuant to the drug testing program must meet the scientific and technical DHHS guidelines and must be certified by the Department of Health and Human Services. Insofar as the DHHS guidelines are inconsistent with other NTSB comments, the NTSB recommends that the FAA revise the guidelines for the industry drug testing program. ATA agrees that only DHHS-approved labs should be used for analyzing specimens but that the DHHS guidelines should be tailored to accommodate the particular needs of the aviation industry.

The SYVA Company and Drug Screening Systems, Inc. submitted comments to the FAA on the DHHS guidelines. Both companies are involved in the manufacture and supply of drug screening systems and equipment. These companies urge caution in the FAA's proposal to adopt the DHHS guidelines based on the restrictive and possibly burdensome nature of the requirements on employers required to conduct drug tests pursuant to the rule. These companies address several issues, including batch requirements, on-site collection, threshold drug levels, and development of new testing procedures not permitted under the current DHHS guidelines.

IFFA feels strongly that the Enzyme Multiplied Immunoassay Technique (EMIT) test should not be used as part of laboratory analysis of specimens because the test detects only the presence of a drug metabolite of the active drug and it often results in false-positive results, false-negative results, or misidentified results.

ALPA generally supports the proposal to make the DHHS guidelines applicable to collection and analysis of specimens. However, ALPA believes that the FAA's regulation should contain additional employee safeguards. First, the regulation should require split samples during collection. Second, the regulation should require that threshold drug levels determined by a confirmation test be consistent with the initial test to account for quantitative discrepancies in test results that are not attributable to deterioration of the sample. Third, ALPA suggests that an employee should be able to present the results of an independent test result to an MRO during review of test results to determine the validity of a positive test result. Fourth, the regulation should allow labor and management, through collective bargaining, to inspect laboratories and to perform quality control and administrative functions related to any anti-drug program.

Labor unions, including TWU and the Teamsters Union, advocate development and implementation of separate or additional guidelines to safeguard the selection and performance of laboratories analyzing specimens for drugs or drug metabolites.

EEAC believes that the DHHS guidelines are a valuable contribution to the goal of establishing procedural norms in collection and testing of specimens. However, EEAC believes that employers should establish individual procedures to ensure the integrity of a sample and its analysis. EEAC emphasizes that it is inappropriate for the FAA to impose such detailed requirements on private employers.

FAA Response. In the NPRM, the FAA proposed that all collection of specimens and drug testing take place in accordance with the "Mandatory Guidelines for Federal Workplace Drug Testing Programs" published by the Department of Health and Human Services (53 FR 11970; April 11, 1988). The DHHS guidelines describe the collection and testing procedures applicable to all drug testing in the Federal government, and they include safeguards for the accuracy and privacy of collection and testing.

The Department of Transportation has determined that certain modifications of the DHHS guidelines are appropriate in the context of this and other DOT-operating administration drug-free workplace regulations. The result will be the DOT "Procedures for Transportation Workplace Drug Testing Programs," which will be codified at 49 CFR Part 40. These DOT procedures are intended to preserve, to the greatest extent practicable, the important safeguards provided by the DHHS guidelines.

Some of the modifications to the DHHS guidelines will be editorial in nature (e.g., references to responsibilities of "agencies" are changed to references to "employers"). Other modifications are intended to take into account differences in the situations of Federal agencies and DOT-regulated industries. For example, in testing at remote sites, DOT-regulated industries may find it necessary to conduct some kinds of testing in medical facilities or through the use of mobile units, rather than the more permanent collection sites contemplated by the DHHS guidelines. It may not be practicable for regulated employers to maintain on-site permanent logbooks. Consequently, the DOT procedures would permit alternative collection and recordkeeping procedures in these circumstances.

The Office of the Secretary in the Department of Transportation will publish elsewhere in today's *Federal Register* an interim final rule with request for comments entitled, "Procedures for Transportation Workplace Drug Testing Programs," that will codify the Department of Health and Human Services guidelines for drug testing at 49 CFR Part 40. This new part will set forth requirements for such things as specimen collection procedures, laboratory procedures, and quality assurance and certification procedures. The rule will provide guidance on how this rule shall be implemented.

During the comment period on the FAA's NPRM, and those rules proposed by other DOT operating administrations, comments were received concerning the DHHS guidelines. These comments are noted in this preamble and also will be transferred to the Department of Transportation to be incorporated in the docket for the Office of the Secretary (OST) interim final rule creating 49 CFR Part 40. OST will respond to those comments, as well as comments received during the comment period for Part 40, in its notice following the end of that comment period.

The FAA proposed only urine testing in the proposals contained in the NPRM. The suggestion of drug testing using analysis of hair specimens raises an issue within the expertise of the Department of Health and Human Services. Thus, at this time, DOT and the FAA do not intend to deviate from urinalysis as the technique for determining the presence of drugs or drug metabolites in an employee's system.

The FAA acknowledges the AMA comments regarding the inability of all aviation medical examiners to comply with the collection and chain-of-custody procedures contained in the DHHS guidelines due to the lack of appropriate facilities for collection. The FAA does not agree with the AMA that the requirements are overwhelming or overly-burdensome. Although the AMA was not specific regarding its objection to the collection and chain-of-custody procedures, DOT has included provisions in the DOT procedures to address some of the difficulties associated with collection and chain-of-custody procedures that may not have been appropriate for private entities. However, the FAA and DOT believe that strict collection and chain-of-custody procedures are critical to ensure the integrity and identity of a specimen provided by an employee. Thus, DOT has retained these protections in its modification of the DHHS guidelines. Moreover, only those aviation medical examiners who choose to provide this service to commercial aviation personnel during a physical examination are required to conform to the minimum procedures contained in the DOT procedures.

Consistent with the suggestion of the NTSB and other commenters, the Department of Transportation will modify the DHHS guidelines to tailor the provisions for application by private entities. The DOT procedures will not modify the basic, technological aspects of the rule (e.g., DHHS certification of laboratories, testing methodologies, collection procedures, and chain-of-custody procedures). Any arguably substantive changes from the DHHS guidelines will be included only to reduce practical and administrative burdens on private entities. These changes will be discussed in an ancillary document published by the Department of Transportation in the *Federal Register*. DOT and the FAA believe that the DOT procedures will provide adequate and appropriate procedures for collection and testing of samples. Although the FAA anticipates that the DOT procedures will prove to be an effective and efficient method of collection and testing, experience under the testing program or a change in the circumstances or needs of the industry may warrant further regulatory revisions in the future.

Accuracy of Drug Test Results

Many commenters base their opposition to drug testing on the perceived inaccuracy of analysis and test results. The commenters include the issues of false-positive test results, passive inhalation of illicit drugs, misidentification of licit drugs, and ingestion of food substances, including poppy seeds, resulting in a positive drug test result.

FAA Response. The FAA is aware of these expressed concerns because each of these issues surfaced in the early 1980s with the first series of drug testing programs introduced in the military and the private sector. In the early years of drug testing and analysis, laboratory security and analytical procedures had not reached today's level of sophistication. False-positive test results occur primarily in analysis of a specimen during an initial screening test, although contemporary screening tests, such as immunoassay tests, have become extremely accurate and approach 99 percent accuracy levels. Despite its increased accuracy, the initial screening test remains a less expensive test used only to yield a preliminary indication of the possible presence of drugs or drug metabolites. In order to ensure the integrity and accuracy of any test result, each positive initial screening test result must be confirmed using GC/MS analysis or another confirmatory procedure that may be subsequently approved by DHHS and incorporated into the DOT procedures. The GC/MS confirmation test is an extremely accurate and sophisticated test and is virtually error-free when used in compliance with the DHHS guidelines. The DOT "Procedures for Transportation Workplace Drug Testing Programs" (49 CFR Part 40), will be essentially identical to the "Mandatory Guidelines for Federal Workplace Drug Testing Programs" published by the Department of Health and Human Services on April 11, 1988.

Employers must comply with the DOT procedures when conducting a testing program pursuant to the final rule. Like the DHHS guidelines, the DOT procedure will provide a system of checks and balances during collection and analysis of specimens. This system ensures the integrity and accuracy of the tests using appropriate scientific methods and rigid chain-of-custody procedures. An employer may only use a laboratory that complies with the DOT procedures. Also, an employer may only use a laboratory that has been certified by DHHS to process and analyze specimens required by the FAA rule. The DOT procedures regarding testing methodologies and technical matters will be identical to the DHHS guidelines. Thus, employers will be able to use any DHHS-certified laboratory since the laboratories will not necessarily be required to use different analytical techniques and testing methodologies for different entities conducting testing. The Department of Transportation expects that sufficient laboratories will have been certified for drug analysis by the Department of Health and Human Services by early 1989. However, the FAA will extend the compliance dates contained in this final rule if DHHS has not certified a sufficient number of laboratories to efficiently and accurately process and analyze specimens pursuant to the requirements of this final rule.

Since the mid-1980s, laboratories have become increasingly sophisticated in their analytical methods and chain-of-custody procedures. Many laboratories have compiled extensive records demonstrating scientific accuracy and protection of individual specimens. For example, CompuChem Laboratories, a major drug testing laboratory, has analyzed over 500,000 urine samples, conducting discrete testing for nine different drugs which resulted in nearly five million distinct analyses of these specimens, since 1980. CompuChem also has analyzed approximately 750,000 urine samples for the presence of two different drugs, resulting in nearly 1.5 million analyses of these specimens, pursuant to its contract with the military. None of the over six million analyses performed for DOT, the military, and other private and public entities has resulted in a false-positive test result.

In late 1987, a CompuChem clerical worker incorrectly labeled two samples that belonged to DOT employees. Within hours after the test results were questioned by the medical review officer, CompuChem and the medical review officer had identified and corrected the error. CompuChem was not satisfied with its prompt resolution of the error. As stated in its comment to the NPRM, CompuChem has instituted an additional system of review, by CompuChem personnel and computer checks, to ensure that ". . . this one in a million error will not reoccur."

Another drug testing firm, PharmChem Laboratories, has conducted over eight million nonmilitary drug tests nationwide. In its statement to the FAA during the public hearing held in San Francisco on June 9, 1988, PharmChem notes that several courts have determined that the GC/MS confirmation test is "virtually 100 percent accurate, assuming that proper chain-of-custody procedures are followed."

The FAA does not believe that the issue of "passive inhalation" of marijuana smoke will prove to be a significant issue leading to false-positive test results. First, PharmChem's statement indicates that the DHHS threshold levels that would result in a positive drug test result for the presence of marijuana or marijuana metabolites (to be incorporated completely and without change in the DOT procedures) are set at a level sufficiently high to preclude the possibility of a positive test result based on passive inhalation of marijuana smoke. Second, studies conducted to simulate the conditions that result in passive inhalation have been conducted in artificially-devised and extremely confining areas that were poorly ventilated. Also, in order to obtain a positive test result, testing was conducted immediately after this prolonged and intensive exposure to the marijuana smoke. Based on the FAA's knowledge of these studies, the FAA has concluded that it is highly unlikely that the identical circumstances would be encountered or accurately reproduced outside a laboratory.

Finally, the FAA believes that the safeguards that will be provided in the DOT procedures and by the medical review officer (MRO) review process, which are essentially identical to the DHHS guidelines, will preclude misidentification of food substances or licit drugs that might produce a false-positive test result. The DOT procedures will provide an individual with an opportunity to report any legal or prescription drugs that he or she may be taking at the time of collection of the specimen. The MRO's broad authority to interpret each confirmed positive test result, to evaluate an employee based on the MRO's knowledge of drug abuse disorders, and to verify that a confirmed positive test result is accurate should preclude misidentification of food substances or licit drugs taken in accordance with a valid prescription. In summary, the FAA believes that the two-step testing process, coupled with the DOT procedures, provides a process by which an individual is protected from erroneous false-positive drug test results.

Preemployment Testing

Most organizations and individuals do not object to the concept of preemployment testing. AOPA supports preemployment testing at the discretion of the employer. Operators who hire pilots or crewmembers pursuant to short-term contracts believe that a preemployment test is burdensome if required each time a pilot is rehired pursuant to a new contract. These entities suggest that preemployment tests be given only at the time of training or placement on a bid list for contracts.

Suburban Airlines has required preemployment testing of all flight crew applicants for over a year. Suburban supports 100 percent preemployment testing of the aviation employees proposed in the NPRM. The Director of the Santa Maria Public Airport District also supports preemployment testing and suggests that preemployment testing be implemented immediately.

The Soaring Society of America (SSA) believes that small business employers should have the option of requiring preemployment drug testing as a condition of employment. SSA feels that preemployment testing should be optional because applicants can circumvent detection in a preemployment drug test merely by abstaining from drug use for a short period of time before the preemployment test.

FAA Response. The FAA believes that preemployment testing is a necessary component of an effective anti-drug program. Pursuant to the rule, a preemployment drug test is required only when an applicant has been selected for employment in a sensitive safety- or security-related position with the employer. The preemployment testing provision does not require an employer to test each applicant for a sensitive safety- or security-related position. The rule simply states that an employer may not hire an applicant to perform sensitive safety- or security-related functions unless the applicant has passed a drug test. Therefore, the employer need only test an applicant before actually hiring the applicant for a sensitive safety- or security-related position.

The FAA has revised the proposed rules in ways which should ease the burden on operators who frequently rehire employees pursuant to short-term contracts. The FAA believes that the central issue regarding the frequency of preemployment testing is the continuity of an employee's involvement in an employer's drug testing program. An employer is required to conduct a preemployment test only the first time that an employee is hired pursuant to a contract with that employer so long as the individual remains in the employer's program, even during periods between contracts. The individual, thus, would be subject continuously to drug testing. In addition, so long as an employee is subject to an FAA-approved anti-drug program, another employer may use that employee to perform sensitive safety- or security-related functions. Thus, an individual who participates through a consortium would be able to provide services on a contract basis to multiple employers without having to submit to subsequent preemployment tests or to participate in another employer's drug testing program. If an employee has not been continuously subject to an FAA-approved anti-drug program, an employer would be required to conduct a preemployment drug test.

In the FAA's opinion, it would be permissible for an employer to allow a contract employee to continue in the employer's anti-drug program after termination of a contract. Particularly in the case of an employer who hires employees pursuant to a series of short-term contracts, both the employer and the employee benefit if the employee is continuously subject to a drug testing program. The employer could "rehire" the employee at any time but would not be required to give the employee another preemployment drug test. In addition, the employee could perform sensitive safety- or security-related functions for another employer on a temporary basis but would not be required to participate in another employer's anti-drug program or to submit to another preemployment drug test. To the extent that the employee is not covered by an FAA-approved anti-drug program, an employer would be required to conduct a preemployment drug test before the employee could be hired by a subsequent employer or rehired by a previous employer.

Periodic Testing

AOPA believes that periodic drug testing should not be part of an employer's drug testing program but should only be conducted based on the reasoned judgment of an aviation medical examiner. RAA supports periodic testing during medical certification at least once each calendar year. RAA believes that the employee should bear the cost of the periodic test. Federal Express does not oppose periodic testing but believes that it should be unrelated to the FAA medical examination.

The AMA opposes periodic drug tests as part of a routine medical examination because compliance with collection and chain-of-custody procedures, such as those contained in the DOT procedures and the DHHS guidelines, would be an undue burden on aviation medical examiners.

ATA stated that its association is not convinced that periodic testing effectively deters illicit drug use because of the relative ease with which this test can be circumvented by abstinence. SSA generally does not endorse periodic testing because an employee can avoid detection by relatively short-lived abstinence before any announced periodic test.

FAA Response. The FAA agrees with the commenters that announced periodic testing can be circumvented by an employee's abstinence from drug use. However, periodic testing does enable an employer to identify those employees who are so heavily-dependent on drugs that they are unable to abstain from drug use for even a short period of time prior to a periodic test.

The FAA has modified the periodic testing requirement of the regulation. Under the proposed regulation, an employee who holds a medical certificate would have been required to submit a specimen for drug testing as part of each medical examination required pursuant to Part 67. The revised section makes it clear that an individual is required to submit a specimen for drug testing during the first medical examination of the employee during the calendar year after implementation of the anti-drug program. Therefore, pilots who hold Class I medical certificates, who are required to have periodic medical examinations at 6-month intervals, must be tested only once during one of the medical examinations of the year pursuant to the anti-drug program.

The revised section also states that an employer may discontinue periodic testing after the first year of program implementation when the employer has implemented its random testing program according to the implementation schedule and, therefore, is conducting a significant number of random tests. The periodic testing requirement will ensure that all current employees who hold medical certificates will be tested once during the first year of implementation of an employer's anti-drug program; most of the employees who hold medical certificates also will be subject to random selection for testing during part of the first year of implementation. The majority of random testing programs will be operational after the first year of implementation and periodic testing, which is less effective than random testing, will no longer be a necessary component of an employer's anti-drug program. The FAA anticipates that these revisions will provide maximum drug detection capability and ease the transition to a full random testing program. The FAA considers the revision to be appropriate to relieve some of the significant economic and administrative burdens noted by the commenters who believe that periodic testing is an ineffective and inefficient drug deterrent.

Random Testing

Most individual commenters oppose random testing for a variety of reasons. Among these reasons is the lack of evidence of drug use or abuse in aviation to warrant random testing, invasion of individual privacy, and violation of constitutionally-protected rights.

AOPA opposes random testing primarily on the basis of the unsettled constitutional issues surrounding random testing and the burden imposed by this testing method on law abiding citizens.

AOPA suggests that the FAA delay promulgation of a final rule until the issues raised by random testing are substantially resolved by the Supreme Court in *Railway Labor Executives' Association v. Burnley* and *National Treasury Employees Union v. von Raab* (cited previously). AOPA states that, by awaiting any Supreme Court decision, the FAA could ensure that the final rule is in conformity with guidance enunciated in the Supreme Court's opinion in *Burnley* and *von Raab*. One commenter submitted comments individually, as national litigation counsel for AOPA, and on behalf of the California Aviation Council and the Orange County Aviation Association. This commenter states that the NPRM is an unconstitutional invasion of privacy and a violation of an individual's procedural due process rights. The commenter believes that the NPRM should be withdrawn to await the Supreme Court's impending decisions.

The AMA supported random testing only as part of a comprehensive rehabilitation program. The AMA believes that random testing is not cost effective, is unnecessarily intrusive, and, without confirmation testing, random screening tests are inaccurate.

In addition to soliciting comments on the general concept of random testing, the FAA solicited comments on an appropriate random testing rate of up to 125 percent. Several small business entities, including TEMSCO Helicopters, Inc., Henson Airlines, and Tramco, Inc., oppose the random testing requirement based on the financial and administrative burdens associated with a 125 percent testing rate, transportation of employees to the collection site, and replacement of personnel during testing. TEMSCO Helicopters suggests that a random testing rate of 10 percent will enable the industry to determine if there is a drug problem in aviation without overburdening the industry. RAA also believes that a 125 percent random testing rate is overreaching and unwarranted; however, if the FAA proceeds with a random testing provision, RAA suggests that a 50 percent random testing rate is appropriate. Although Suburban Airlines strongly supports random testing, Suburban believes that a 50 percent random testing rate of the employees proposed in the NPRM would relieve the unjustifiable economic burden on a cost-benefit basis. ERA Aviation, Inc., a Part 121 and Part 135 certificate holder operating more than 12 helicopters and 12 airplanes, believes that unannounced random testing is the most effective deterrent to drug abuse. However, ERA questions a requirement to randomly test 125 percent of the employees on an annual basis. ERA believes that random testing of 25 percent to 50 percent of the affected employee groups, coupled with periodic testing, would provide a sufficient deterrent to drug use if the penalties for positive test results were severe.

NTSB opposes the random testing requirement of the proposed rules. However, if random testing were included in the final rule, the NTSB believes that a relatively high random testing rate would be a more effective deterrent to drug use. The acting Chairman of the NTSB did not concur with the NTSB's position regarding random testing; the acting Chairman supports random testing provided that the random testing rate is sufficiently high to serve as a deterrent to drug use.

ATA, American Airlines, and Delta Airlines support the FAA's mandatory random testing provision because it would provide the maximum deterrent effect to illicit drug use. ATA supports a random testing rate of 50 percent based on review of Department of Defense and private industry drug testing programs. American Airlines also supports the mandatory random testing provision and a 125 percent random testing rate. A consultant to American Airlines on the issue of drug abuse prevention in the workplace, who submitted an affidavit attached to comments by American Airlines, is convinced that random drug testing is "the only powerful and proven means of detecting drug use and drastically reducing drug use and thereafter preventing further drug problems from occurring." On the other hand, Federal Express states that random testing should be permitted, but not mandated, by regulation. Federal Express states that if the FAA ultimately mandates random testing, carriers should be allowed to choose a random testing rate between 15 percent to 50 percent. Federal Express also believes that carriers should be free to set different random testing rates for different groups of employees.

There was almost universal opposition to random testing by unions and organizations representing employees. ALPA, the Transport Workers Union of America (TWU), and the International Brotherhood of Teamsters (Teamsters Union) are adamantly opposed to random testing. ALPA (Council #12) concurs in ALPA's general opposition to random drug testing of professionals in the aviation industry. The Teamsters Union states that a drug testing program is a change in working conditions which, in accordance with Federal labor law, is a mandatory subject of collective bargaining.

SSA does not oppose random testing of employees. However, in order to provide a workable and effective anti-drug program for small business, SSA suggests that entities employing 12 or fewer full-time employees be exempted from the random testing requirement. SSA defines "full-time employees" as those individuals who work for an employer at least 30 hours per week or 5 days per week and have maintained that schedule for at least 90 days.

One commenter, who spoke at the San Francisco public hearing on June 9, 1988, has been a practicing physician for 24 years and has devoted the past seven years to the exclusive practice of aviation medicine. This commenter has worked regularly with EAP representatives and has been involved with ". . . hundreds of airline employees before, during and after treatment for drug and alcohol dependencies." Based on the commenter's extensive experience in drug and alcohol use by aviation employees, he observes that the present system of relying on ". . . peer and supervisory identification, and a highly visible employee assistance program," and on a scheme of "preemployment, for-cause and fitness-for-duty drug testing, enables significantly impaired employees to remain in the workforce." Therefore, this commenter concludes that in order to eliminate those remaining risks, ". . . there is nothing more we can do short of random testing."

FAA Response. While noting the constitutional issues surrounding the issue of random testing discussed previously, the FAA continues to believe that unannounced testing based on random selection is a fundamental component of an effective drug testing program. Unannounced, random testing has proven to be an effective deterrent to drug use and will provide safety benefits to the aviation community by reducing or eliminating drug use by sensitive safety- or security-related aviation personnel. Unannounced, random testing programs initiated by the military, including the Coast Guard, and private industry show declining drug use, evidenced by a decrease in the number of individuals who test positive for drugs, over the course of the drug testing program.

The FAA received many comments regarding the proposed random testing rates. Several commenters suggest a random testing rate of 125 percent because that rate would result in the most significant deterrent to drug use in the aviation industry. However, other commenters who address this issue believe that a 125 percent random testing rate would be excessive and would impose a significant economic burden, particularly on small aviation businesses. The commenters propose a range of random testing rates starting at 10 percent annually. The majority of the commenters suggest that an annual 50 percent random testing rate for the aviation industry is appropriate. These commenters believe that the 50 percent testing rate accomplishes several goals consistent with the intent of the proposal.

In response to the commenters, the FAA has substantially revised the random testing proposal in the NPRM in order to reduce the practical and administrative burdens associated with initiating an unannounced testing program based on random selection of employees. The FAA's approach also is designed to provide a random testing rate that balances cost effectiveness and burdens on employees and employers but still results in an effective and credible deterrent to drug use.

For some employers, particularly those with a large number of employees subject to drug testing, it may be a substantial burden to move from no random drug testing of employees directly to random testing of 50 percent of the covered employees. For example, if required to have tested 50 percent of all covered employees by the end of the first year, employers might have to test at rates far above a 50 percent rate toward the end of the year, to make up for lower rates at the beginning of the year. Employers should be permitted to start the program at a lower testing rate and work up to a 50 percent rate as experience is gained and the testing procedure becomes administratively routine. The FAA does not want to create a situation which might lead to inadvertent mistakes by requiring initial unannounced testing based on random selection at too high a rate.

The final rule, therefore, provides an implementation procedure that would allow employers to phase in unannounced drug testing based on random selection of employees during the first 12 months in which tests are required to be conducted. Employers would not be required to reach an annualized rate of 50 percent until the last test collection of the first year of the program. The total number of unannounced tests based on random selection of employees during the first 12 months of the employer's testing program would have to equal at least 25 percent of the covered employee population. Also, the employer is required to space the tests reasonably throughout the year. This approach will provide a sufficient level of deterrence to drug use and will permit the employer to phase in the 50 percent rate.

Suppose, for example, that an employer has 1000 sensitive safety- or security-related employees. At a 50 percent annual rate, the employer would be required to conduct 500 unannounced tests based on random selection during a year. Under the phased approach, however, the employer could conduct only a few drug tests at the beginning of the program and then gradually increase the number of tests until, by the end of the first year, the annualized rate of 50 percent was achieved. Thus, if the employer's drug testing plan contemplated administration of unannounced tests based on random selection on 12 occasions during the year, the employer would need to collect 42 urine specimens for analysis (500 divided by 12) on the last occasion, but could collect fewer specimens until then. Overall, the employer would have to collect at least 250 specimens for analysis during the first year. In subsequent years, the employer is required to maintain the 50 percent annualized rate for unannounced testing based on random selection of employees.

The FAA believes that the final rule provides a moderate, but substantial, level of testing based on random selection that enables an employer to increase random testing gradually during the first year of program implementation. During subsequent years of the program, the employer must maintain an annualized rate of 50 percent of the covered employees. In order to determine the appropriate number of employees that must be tested to reach the appropriate "annualized rate" for the random testing program, the employer shall refer to the number of employees subject to the rule at the beginning of a calendar year.

At this time, the FAA believes that this phased program, ultimately reaching a testing level equivalent to 50 percent of the covered employees, will provide a sufficient deterrent to drug use without imposing an undue economic or administrative burden on employers and employees subject to the requirements of the regulation. In addition, the program will produce a sufficient data base at different annualized rates and testing levels for the FAA to analyze the scope of any drug problem in the commercial aviation industry generally or within any particular sector of the commercial aviation community. Analysis of the random drug testing data submitted by an employer will allow the FAA to determine if the random testing program should be revised in any manner.

The phased program and the final 50 percent random testing rate is consistent with the random testing program currently applicable to safety- and security-sensitive employees of the Department of Transportation. DOT's random testing program began in September 1987; the random testing rate has gradually increased and will reach an annualized rate of 50 percent by October of this year. Data from September 1987 to the present show that the current detection rate found as a result of DOT's random drug testing program is 0.83 percent; data from February 1987 to the present show that the current detection rate for FAA and DOT's periodic (e.g., scheduled) testing program is 0.012 percent.

According to the provisions of the final rule, all employers are required to randomly select a sufficient number of employees to enable the employer to conduct unannounced testing of employees who perform sensitive safety- or security-related duties for the employer at the appropriate rate during the calendar year. In order to conduct enough tests to reach the required percentage, an employer may be required to select a number of employees who perform a sensitive safety- or security-related function for unannounced testing that is in excess of the actual number to meet the required percentage. Selection of a greater number of employees enables the employer to reach the appropriate annualized rate despite absences due to vacations and medical leave or absences due to an inability to reach a collection site resulting from travel or duty requirements.

If a consortium has been established among employers or operators, the consortium would be required to select and to test the appropriate rate of the aggregate total of employees subject to the final rule who are covered by the consortium. The testing rate of the consortium will be attributed to each employer participating in the consortium. In the FAA's opinion, the consortium's testing rate can be attributed to each participating employer, although less than the appropriate percentage of the employees of a particular employer have been tested during a calendar year, without significantly decreasing the deterrent effect of a random testing program. An employer or consortium that develops a random selection scheme involving preliminary selection criteria, such as geographical zones, must specify these schemes or variations in the employer's anti-drug plan. The FAA realizes that these variations may provide administrative ease for an employer. However, the FAA must review these variations to ensure that the scheme does not dilute the required annualized rate required by the final rule.

The FAA received comments from small aviation businesses regarding the difficulty of testing a large number of employees on a random basis during the first year of implementation of the rule. In response to these comments, the FAA substantially revised the provisions of the propose rule. Certain Part 135 certificate holders whose total workforce includes 11 to 50 sensitive safety- or security-related employees are given additional time to submit a random testing plan and to ensure that the appropriate percentage of the sensitive safety- and security-related employees are subject to unannounced drug testing on a random selection basis during a calendar year.

The FAA encourages these employers to develop a comprehensive random testing plan as soon as possible. As discussed later, Part 135 certificate holders that employ 10 or fewer covered employees and those individuals or entities listed in § 135.1(b), who are otherwise exempt from the requirements of Part 135 but are included in the final rule because they are engaged in operations for compensation or hire, are given additional time to develop and implement an anti-drug program that includes random testing. The FAA notes that the final rule does not restrict the ability of these employers to submit a random testing program, and to implement that program, earlier than the timeframes contained in the final rule.

Some commenters address the issue of the difficulty in developing an efficient and successful random testing program. The FAA notes that the rule provides flexibility to an employer to begin the random testing program at a lower random testing rate so long as the required percentage of covered employees have been selected on a random basis and have been tested by the end of the first year after approval of the employer's anti-drug program or random testing plan. For example, an employer may test small increments of employees at the beginning of a period and may test a large percentage of employees at the end of the same period to achieve the annualized rate that is required by the final rule.

Postaccident Testing

AOPA supports postaccident testing if it is conducted by the NTSB. AOPA believes that postaccident testing should not be a part of an employer's drug testing program and should not be conducted by the FAA.

The NTSB comments that the 24-hour period provided for postaccident testing is excessive. The NTSB recommends that the FAA specify a maximum period of four hours for collection of a postaccident drug test and provide an appropriate penalty for failure to collect the specimen within the 4-hour period. The NTSB believes that delays of more than four hours in sample collection impair detection of a drug and its "psychoactive component(s)" in blood samples, particularly substances such as cocaine, marijuana metabolites, some amphetamines, and phencyclidine (PCP). The NTSB also suggests that blood testing is the preferable method for postaccident testing and suggests that the FAA permit this method of testing for the presence of drugs after an accident. ATA also suggests that postaccident testing should be conducted within 4 hours after an accident and, in no case, later than 12 hours after an accident.

ATA recommended that the NTSB's definition of "incident" should be added to the postaccident testing provision to cover situations when an aircraft is empty or when personal injury or physical damage is less severe than specified in the postaccident testing provision. ATA also believes that postaccident testing should be conducted unless a supervisor determines that an employee's drug use was not a contributing factor in the accident. FEIA believes that postaccident testing is "wasteful and intrusive" unless the accident clearly is caused by the person to be tested and there is individualized probable cause to believe that the employee was impaired at the time of the accident.

SSA does not completely endorse postaccident testing based on a variety of practical considerations that SSA believes are unresolved in the regulation as proposed. However, SSA states that postaccident testing, after an NTSB-defined accident, of any employee working for a small business should be conducted as deemed feasible by the employer. SSA believes that postaccident testing should be conducted within 24 hours if the employer determines that testing is feasible and appropriate. Also, if the employer determines that testing is not feasible, the FAA may request an explanation from the employer during the routine investigation of the accident.

FAA Response. In the NPRM, the FAA proposed that postaccident tests be conducted within 24 hours after an accident based on the possibility that difficulties may arise after an accident in transporting an individual to a collection site or bringing a drug testing kit to the scene of the accident. The FAA is aware that extended delays in sample collection and testing after an accident may result in deterioration or elimination of a drug or a drug metabolite from a person's system. Recognizing these difficulties and concerns, the FAA has modified the postaccident testing provision. Under the final rule, an employer must conduct postaccident testing of an employee as soon as possible after the accident but in no case later than 32 hours after the accident. Selection of this time period comports with the DOT's postaccident drug testing program for DOT employees, which provides a maximum of 8 hours to determine if an employee is required to be tested and an additional 24 hours to actually obtain the sample for testing.

The FAA strongly encourages employers to promptly determine if an employee is subject to postaccident testing, particularly in cases where there is little or no uncertainty that an employee's performance was a contributing factor in the accident. The FAA intends to vigorously enforce the regulation where there is unreasonable delay in determining whether an employee should be tested under this provision or where there is unreasonable delay in testing after the determination to test is made. Although several commenters who address the issue suggest time periods of less than 24 hours, it is the FAA's opinion that a maximum period of 32 hours is a workable and reasonable accommodation that is appropriate for the aviation industry.

The NTSB's suggestion that the FAA require an employer to conduct postaccident testing within four hours after an accident is based on the time-sensitive nature of toxicological testing of blood samples. On the other hand, urinalysis testing does not involve the extreme time-critical considerations associated with collection and testing of blood samples. In the FAA's opinion, postaccident urinalysis testing is sufficient at this time to provide an indication of an individual's drug use that may have been a causal factor in an aviation accident.

Also, the FAA proposed only urine testing in the NPRM, specifically excluding blood testing as an option, for all drug tests that would be conducted under the anti-drug program. Therefore, the FAA considers the NTSB's suggestion to be beyond the scope of the notice and the FAA has not adopted NTSB's suggestion to permit postaccident testing by collecting a blood sample. In the aviation context, the significant proportion of serious accidents involving fatalities to crewmembers provides data with respect to drug involvement in those accidents. In the FAA's judgment, extending full toxicological testing to surviving crewmembers is not warranted at this time.

Presently, the FAA is not convinced that including the NTSB's definition of "incident" as a trigger for drug testing is warranted. As discussed below, the FAA believes that the revisions to the section providing for testing based on reasonable cause will adequately address circumstances that might qualify as "incidents." The current provisions allow sufficient, but limited, latitude to an employer to determine whether an employee should be tested following an incident or an accident not covered by the NTSB's definition of accident.

Although several commenters suggest that the FAA expand the scope of the postaccident testing provision, the FAA believes that the postaccident testing provision, limiting testing to only those employees whose performance may have been a cause of the accident, is appropriate. The FAA believes that it is inappropriate to require postaccident testing of an employee whose performance could not have been a cause of the accident merely because that employee happens to have been onboard or involved with an aircraft involved in an accident.

Testing based on Reasonable Cause

The NTSB suggested that the FAA include "incidents," as defined by the NTSB's rules, as events that would trigger reasonable cause testing. RAA agrees with the requirement that two supervisors, one with training in the symptoms of drug abuse, must concur in the decision to test an employee based on reasonable suspicion of drug use. RAA believes that each carrier should determine the conditions which constitute reasonable suspicion. FEIA also believes that two supervisors, trained to detect symptoms of drug abuse, must concur in all decisions to test based on probable cause. ATA suggests that only one supervisor be required to trigger testing of an employee based on reasonable cause. In addition, ATA states that supervisors should not be required to have specialized training for the purpose of determining when reasonable cause exists to test an employee.

Tramco, Inc. believes that the proposed circumstances that would support a decision to test based on reasonable cause are too restrictive. Tramco believes that an employee's attendance patterns, tips from coworkers, "error rates," and other indirectly observable indications should also trigger testing based on reasonable cause. Tramco currently uses these triggers in its drug testing program; Tramco believes that the FAA's criteria will not result in detection of possible drug users because it is limited to physical and observable indices of gross impairment. SSA supports "for-cause" testing, as the employer deems necessary and feasible, if testing is conducted pursuant to the DHHS guidelines.

IAM and TWU believe that the criteria that would trigger testing based on reasonable cause are ill-defined. These organizations believe that testing based on reasonable cause will be a tool for employee harassment; these organizations suggest that supervisory personnel should be trained to recognize the symptoms of drug impairment or that at least one of the supervisors making the determination to test should be someone other than the employee's immediate supervisor. The Teamsters Union and IAM believe that decisions and determinations related to testing based on reasonable cause should be documented and supported in a written report.

The Newton Psychological Centre submitted a "basic identification profile," developed to aid supervisors of the Philadelphia Electric Company in identification of employees who may not be fit for duty. The profile is used to detect early warning signs of problems based on medical or psychological problems. The profile sets forth behavioral, emotional, physical, biological, and cognitive cues related to the use of marijuana, cocaine, alcohol, barbiturates, amphetamines, and heroin, or cues related to anxiety or depression. The company's policies regarding alcohol and substance abuse, job performance warning signs, and counseling and confrontation guidelines are printed on the profile.

FAA Response. As stated in the FAA's response to comments submitted on the postaccident testing provision, the FAA is not including a "postincident" testing provision at this time. However, the circumstances under which a supervisor could require an employee to submit to a test based on reasonable cause have been modified in the final rule. Based on the comments submitted, particularly by employers who have existing "reasonable cause" testing programs, the FAA has expanded the list of circumstances that might trigger testing under this provision. Evidence of repeated errors on the job, regulatory or company rule violations, or unsatisfactory time and attendance patterns, if coupled with a specific, contemporaneous event that indicates probable drug use, could provide additional, cumulative evidence to support a decision to test an employee based on reasonable cause.

As proposed in the NPRM, an employer is permitted to test a specimen provided by an employee, collected pursuant to a reasonable cause determination, for the presence of any drug or drug metabolite listed in Schedule I or Schedule II of the Controlled Substances Act. The employer may test for these drugs, as part of the employer's approved anti-drug program, if the employer has specific approval from the FAA to include these controlled substances in the employer anti-drug program. In addition, the testing for these additional drugs must be conducted in accordance with the DOT procedures to be codified in 49 CFR Part 40.

The FAA believes that the provision requiring two supervisors, one of whom has specialized training in detecting the symptoms of drug use, to concur in the decision to test an employee based on reasonable cause is appropriate for large companies. However, the FAA has revised this section of the rule in order to address the legitimate concerns of small employers, many of whom do not have more than one supervisor employed at the company. For companies that employ 50 or fewer employees who perform a sensitive safety- or security-related function, the rule specifies that only one supervisor is required to make the determination that would trigger testing of an employee based on reasonable cause. The FAA also has clarified the annual EAP training requirements for supervisors to make it clear that supervisors who make reasonable cause determinations must have specific training that will enable them to assess and demonstrate the basis for testing based on reasonable cause.

Testing after Return to Duty

ATA believes that the FAA should not set regulatory standards governing postrehabilitation testing. ATA, other employer and employee organizations, and many individual commenters believe that a schedule for postrehabilitation testing should be made by management in consultation with persons involved in an employee's rehabilitation program. In order to ensure continued disassociation from drugs, RAA supports a requirement for monthly screening, for 12 months, after an employee has completed rehabilitation.

APFA believes that a schedule for postrehabilitation testing should be determined by an employee's EAP counselor and should be limited to a reasonable period of no more than one year. AFA states that decisions regarding testing after rehabilitation should be the responsibility of the individual treatment facility used by the employee.

FAA Response. The FAA agrees with the commenters that suggest that unannounced testing during any rehabilitation and before an employee returns to duty should be determined by the persons involved in the employee's rehabilitation program. Decisions regarding the frequency of testing during any rehabilitation program appropriately lie with those individuals who are familiar with and involved in any employee rehabilitation program.

However, unannounced testing after an employee returns to duty is critical to ensure an employee's continued disassociation from drugs. The FAA believes that it is essential to require unannounced testing of employees who have returned to duty in a sensitive safety- or security-related position for an employer after failing a drug test given by an employer or after refusing to submit to a drug test required by the final rule. This type of testing is the most effective means of ensuring that an employee remains drug free while performing commercial aviation duties. Moreover, once an employee has returned to duty, the FAA and the employer have a substantial interest in requiring that employee to be drug free while performing sensitive safety- or security-related duties in commercial aviation. Therefore, the FAA has included a provision in the rule requiring an employer to monitor an employee who has returned to duty by providing unannounced drug testing, pursuant to a schedule determined by the MRO, for not more than 60 months after the employee has returned to duty.

The rule also provides that an employer must conduct unannounced testing of an individual who is hired to perform a sensitive safety- or security-related function after failing a drug test or after refusing to submit to a drug test for another employer and who has not previously been subject to return-to-duty testing. This section of the final rule addresses situations where an individual fails a drug test or refuses to submit to a drug test but does not return to duty for an employer. In this case, any subsequent employer would be required to test an individual for not more than 60 months after the individual is hired to ensure that the individual is drug free. In the FAA's opinion, if an employee failed a drug test given by a previous employer but returned to duty with that employer in accordance with the requirements of this final rule, a subsequent employer would not be required to reevaluate a prior employer's return-to-duty decision. An employer would be required to test this individual prior to employment but would not be required to monitor the employee after the employee was hired. Pursuant to the final rule, the medical review officer (MRO) has the discretion to determine the appropriate level of unannounced testing for an individual or an employee. The FAA believes that it is appropriate to allow the MRO to tailor the frequency of this type of testing to adequately address differences between individuals, the level and type of drug use, and any treatment or counseling program.

The FAA notes that the MRO also is required to ensure that an employee has been tested for drugs, in accordance with the procedures in the final rule and the DOT procedures, before being hired or returning to duty. In most cases, the MRO will not be required to arrange testing for an employee because the employee will have taken a drug test as part of any employee rehabilitation program. However, the MRO must ensure that an individual or employee has been tested, in accordance with the procedures of Appendix I to Part 121 and the DOT procedures, before the MRO can make a recommendation that an individual be hired or that an employee be returned to duty after failing a drug test or after refusing to submit to a drug test. In the FAA's opinion, a preemployment drug test would suffice to satisfy this requirement of the final rule.

Employee Assistance Programs and Rehabilitation

The FAA sought comment in the NPRM regarding three different EAP options. These options specified the circumstances under which an employee would be given the opportunity to seek rehabilitation. Option 1 would allow all employees to seek an opportunity for rehabilitation regardless of how the employee's drug use was detected. Option 2 would allow most employees, except those employees whose drug use was detected as a result of postaccident testing or testing based on reasonable cause, to seek an opportunity for rehabilitation. Option 3 would only allow employees who volunteer to seek rehabilitation and would exclude all employees whose drug use was detected by any other means. Under all three options, an employer would not be required to offer an opportunity for rehabilitation or to provide job security to any employee who was identified as a drug user on the job.

Employer organizations tend to support the third option proposed in the NPRM regarding rehabilitation and reemployment or job security opportunities that should be offered to employees. Part 121 certificate holders, as generally noted by ATA, support the third option. For example, Delta Airlines believes that the most effective deterrent to drug use is the threat of losing a job. On that basis, Delta states that mandatory rehabilitation and an opportunity for continued employment would diminish the effectiveness of the rule. American Airlines disagrees with ATA's position and supports the first option. Federal Express supports the third option if the FAA mandates rehabilitation. The Helicopter Association International (HAI) states that requiring an employer-sponsored rehabilitation program whenever required testing of an employee produces a positive drug test result places an unwarranted burden on the employer. HAI believes that an employer should have the right to dismiss an employee if any drug test conducted during employment produces a positive test result. HAI states that the employer should have the ability to decide which employees, based on the "value" of the employee to the organization, would be offered an opportunity for rehabilitation.

Small Part 135 certificate holders generally state that an employer should have the right to fire any employee who uses drugs and feel that an opportunity for rehabilitation should not be offered to any employee who uses drugs. These small employers base their position on the potential liability to the company of rehiring a known drug user, the expense to the company of holding the employee's job open, or replacing an employee on a temporary basis, during rehabilitation.

The AMA reaffirmed its long-standing support of employment-based treatment and assistance programs for employees with alcohol or drug problems. The AMA believes that the FAA should require an employer to provide one opportunity for rehabilitation to any employee who voluntarily enrolls in an EAP and to any employee who is identified as a drug user through testing.

NTSB generally concurred in the concept of requiring an employer to provide EAP services to employees. The NTSB recommended that employers be required to offer one opportunity for rehabilitation to employees who volunteer for an EAP and for employees who are identified as drug users through any type of drug testing.

Most small business entities, TEMSCO Helicopters, Inc. and Overseas Air Transport Corporation for example, object to a regulatory provision that would require an employer to provide job security to an individual enrolled in rehabilitation. This objection is based on the financial burden of keeping a job open for an employee who is unable to perform his or her duties and the elimination of an employer's discretion to fire an employee who uses drugs. RAA believes that an employee who has successfully completed rehabilitation, as determined by the head of the rehabilitation program and airline management, should be offered an opportunity to return to duty. Executive Air Fleet (EAF), a Part 135 certificate holder with 200 employees subject to testing, would support job security for an employee who voluntarily sought rehabilitation and who had three to five years of service with the company. SSA also believes that an employee's length of employment may be a reasonable factor to consider when specifying an employer's obligation to retain or rehire an employee participating in rehabilitation. SSA also states that holding an employee's job open during inpatient rehabilitation will greatly complicate small business operations for an unknown time period. Henson Airlines states that, under its existing program, employees will be fired as a result of a positive alcohol or drug test. ERA Aviation, Inc. strongly objects to any Federally-mandated rehabilitation and rehire requirement. ERA Aviation objects to the cost of providing EAP services, but more important, objects to assuming the potential liability problems that could result from rehiring a known user of illegal substances even if that employee has successfully completed a rehabilitation program.

Several small operators, including TEMSCO Helicopters, Inc., object to the requirement to provide an opportunity for rehabilitation to employees identified as drug users. Henson Airlines provides an opportunity for rehabilitation only to employees who voluntarily enroll in rehabilitation. RAA supports these views. Organizations such as the American Association of Airport Executives (AAAE) and ATA believe that an opportunity for rehabilitation and subsequent reemployment should be offered only to employees who volunteer for rehabilitation. SSA states that there should be no requirement that a small business retain or rehire any employee who tests positive for drugs as a result of any unplanned drug test, including postaccident or for-cause testing. ATA believes that limiting rehabilitation and reemployment to volunteers has the dual effect of making safety the industry's highest priority and containing the costs associated with rehabilitation. AAAE believes that any employee who tests positive for drugs should be dismissed immediately. AAAE comments that employers and employees should be free to negotiate broader rehabilitation and reemployment rights as part of a collective bargaining agreement.

Labor organizations are strong supporters of broad EAP opportunities and services. TWU and FEIA believe that all employees who test positive, regardless of the reason for testing, should be given at least one opportunity for rehabilitation. FEIA supports the requirement for at least one rehabilitation opportunity because a positive drug test is not proof of impairment on the job. The Teamsters Union believes that negotiated, client-specific rehabilitation programs should be available to employees who volunteer and for employees who test positive on one occasion. Labor organizations comment that all rehabilitation costs should be paid by the employer either directly or as part of an employee benefit or insurance package. TWU concurs with this position, insofar as it relates to the first positive test result, unless the employee has engaged in conduct that would otherwise justify suspension or discharge under an applicable collective bargaining agreement.

ALPA states that there is no valid reason to limit access to an EAP only to employees who volunteer for rehabilitation. Based on experience in the HIMS program, only 15 percent of the pilots treated for alcoholism were self-referred; 85 percent of the pilots were discovered by the union or management, or both. ALPA believes that rehabilitation should be made broadly available to any employee who could benefit from an EAP and that, in some cases, a second opportunity for rehabilitation may be appropriate. ALPA urges the FAA to revise the proposed regulation to require employers to pay the cost of rehabilitation programs that are mandated by the regulation.

ALPA believes that traditional EAP techniques that are tailored to a specific population, such as the HIMS program, will be more effective in deterring drug use than the anti-drug program proposed in the NPRM. During the 15-year period that the HIMS program has been in effect, 800 pilots have participated in rehabilitation for alcoholism yielding a long-term success rate of 93 percent. ALPA states that the average "off line time" for pilots involved in the HIMS program is approximately 120 days: 30 days for treatment; 30 days for aftercare treatment, observation, and processing; and 45 to 60 days for processing of an FAA application. The recovery rate for pilots who participate in one rehabilitation opportunity is 85 percent. Of the 15 percent of the pilots who suffer a relapse after the first treatment, approximately 50 percent are successfully treated in their second rehabilitation opportunity.

FAA Response. Most comments regarding rehabilitation deal with the issue of whether, and under what circumstances, to offer rehabilitation and to provide job security to an employee and the length of any employee rehabilitation period. The FAA carefully considered the various arguments submitted by the commenters on the issue of EAP services and rehabilitation opportunities for employees. The FAA understands, and considered, the arguments raised in defense of broad rehabilitation opportunities and job security for aviation personnel who use drugs.

However, the FAA reviewed the two options that included provisions providing broad rehabilitation opportunities and job security to employees whose drug use was detected through testing under the final rule. Many of the commenters oppose rehabilitation opportunities and job security for employees who fail to discontinue drug use and wait to be detected by testing. The FAA agrees with these commenters and believes that a strong message must be conveyed to drug users that the use of drugs is unacceptable in the aviation industry. The FAA's primary duty, pursuant to statutory mandate, is to consider the adverse safety consequences surrounding the issue of drug use by sensitive safety- and security-related aviation personnel. On this basis, the FAA has determined that employers should not be obligated to offer an opportunity for rehabilitation or to provide job security to employees who fail a drug test or who use drugs on the job. The FAA understands that broad rehabilitation opportunities and job security for employees, without regard to the manner of detection of drug use, may help those employees who are unable to help themselves. But, the FAA believes that it is inconsistent with the agency's safety responsibilities to promote the message that drug use in the aviation industry will be tolerated until an individual's drug use is detected through testing. The FAA believes that it is inappropriate to place the agency and an employer in the anomalous position of allowing any employee who uses illegal drugs to work in a sensitive safety- or security-related position and whose drug use may adversely affect aviation safety. Rather, the FAA believes that it is appropriate and consistent with its statutory safety mandate to prohibit an employee who fails a drug test, who refuses to submit to a drug test, or who uses drugs on the job from acting in a sensitive safety- or security-related position. The FAA is convinced that the comprehensive testing program of sensitive safety- and security-related employees, combined with an employee assistance program to educate and train all personnel, is consistent with the statutory duty to promote aviation safety and will reduce any drug use in the aviation community.

The FAA also carefully reviewed the third option presented in the NPRM that would provide an opportunity for rehabilitation and job security to an employee who admitted his or her drug use and who volunteered for rehabilitation before being detected through drug testing. However, in the FAA's opinion and as noted by the commenters, there are several issues related to employee rehabilitation and retention or reemployment benefits that must be considered in development of the final rule.

For example, the term "rehabilitation" generally means the period of time during which an employee is receiving treatment or counseling for a drug problem. The length of any rehabilitation period is dependent on several factors such as the availability and enrollment period of rehabilitation services, the length and extent of treatment for the level of use and the type of drug used, collection and analysis of tests given during rehabilitation, and the review process that may lead to a recommendation to return to duty in a sensitive safety- or security-related position. The term "rehabilitated" generally means that an employee is determined to be drug free and, based on the employee's progress and prognosis during rehabilitation, the employee may return to work. The fact that an employee has returned to work does not mean that the employee is exempt from follow-up or aftercare treatment and counseling.

The FAA is aware of the wide variety of rehabilitation programs that vary both in the length of treatment and type of treatment depending on the substance used and the availability of rehabilitation and treatment services. One standard rehabilitation and treatment program, generally necessary for those individuals who require intensive inpatient care followed by outpatient care and counseling sessions, specifies 28 days of inpatient care. Other programs may involve shorter periods of time for inpatient care, may involve outpatient treatment only, or may involve a combination of inpatient and outpatient care of varied duration. For example, some treatment programs may require three to four sessions, given on two or three nights a week, over a six to eight week period and followed by less frequent meetings or counseling sessions. Other treatment programs might involve individual or group counseling sessions on a weekly basis, over a period of one year or more. An additional factor that affects the length of treatment or rehabilitation is the availability of private or community services in a particular area.

The FAA reviewed these variables to determine if a timeframe for voluntary rehabilitation and job security could be developed and included in the final rule. The FAA carefully considered the comments from many aviation businesses that oppose any regulatory requirement to offer rehabilitation and to retain or rehire any employee who admits to illegal drug use. The commenters base their objections on several factors including elimination of an employer's discretion to terminate an employee; undue complication of operations due to potential extended absences of employees enrolled in rehabilitation; and negation of an employer's ability to tailor rehabilitation opportunities and job security to a particular employee population. The most strenuous objections are based on the substantial and unwarranted burdens, both administrative and financial, associated with rehabilitation and job security for employees. Based on financial information submitted by the commenters, it appears that expenses of rehabilitation and job security opportunities as proposed would seriously affect large aviation entities and would probably overwhelm small companies.

After review of the considerable variables in treatment and the extensive arguments presented by the commenters, the FAA concluded that a reasonable accommodation of burdens on employers who may not be able to absorb employee absences and realistic opportunities for employee rehabilitation can not be imposed in the abstract. Thus, the FAA does not agree with the commenters who state that the FAA should specify an opportunity for rehabilitation and the amount of time during which an employer is required to provide job security for an employee enrolled in rehabilitation.

Many employers in the aviation industry currently offer rehabilitation opportunities and job security benefits to employees. The FAA anticipates that those employers will continue to offer these opportunities and benefits to employees and that other employers may elect to include these components in any negotiated employee benefit package. Because many aviation entities have resolved the relative administrative, personnel, operational, and financial issues that surround employee rehabilitation and job security requirements, the FAA believes that the aviation industry is able to design appropriate programs and services for its employees. The FAA believes that, in light of the variables and burdens addressed above, issues regarding an adequate amount of time for rehabilitation, an appropriate amount of time to receive a recommendation to return to duty in a sensitive safety- or security-related position, and job security matters, are best addressed in the specific employment context.

Thus, an employer is not required to offer an opportunity for rehabilitation, to provide job security, or to provide the resources for rehabilitation to any employee. At the same time, employers may offer these opportunities and benefits to employees; the FAA urges employers to consider the experience of employers who have developed rehabilitation programs.

The final rule does not prohibit an employer from reassigning an employee to a position that does not involve the performance of sensitive safety- or security-related duties. The final rule also does not dictate whether an employee is required or permitted to use vacation time, sick leave, or leave without pay in order to accommodate the employee's time away from his or her sensitive safety- or security-related position. The FAA believes that issues such as termination, reassignment, hiring of temporary employees to fill a position, or policies regarding an employee's absence from a position, are issues that are appropriately the subject of employer and employee negotiation or collective bargaining.

The NPRM did not propose to require an employer to pay for an employee's rehabilitation and final rule also does not address this issue. Indeed, since an employer is permitted to terminate an employee who fails a drug test or who refuses to submit to a drug test, and such employee does not have a right to return to duty for that employer, this issue is not relevant to the final rule. However, the employer may cover an employee's rehabilitation expenses through an employee benefit package, insurance coverage, or as a matter of collective bargaining negotiated between the employer and the employee. The FAA considers these areas to be a matter between employers and employees and, as such, are left to the discretion of the employer or to be negotiated during collective bargaining.

EAP Education and Training Programs

ATA states that the FAA should not specify the details and contents of an employer's EAP. The Teamsters Union believes EAP services should be negotiated between labor and management and that rehabilitation programs should be client-specific. ALPA believes that EAP services should be tailored to the specific employee population as the HIMS program is tailored to pilots in commercial aviation.

Various labor organizations conclude that EAPs, instead of mandatory testing, are the preferable method to conduct an anti-drug program. AFA also urges the FAA to separate the administration of any drug testing programs, if mandated at all, from administration of an EAP.

The FAA received considerable data in response to the ANPRM and the NPRM regarding the availability of EAP services. Some of these commenters included specific, existing EAPs that are recommended by the industry. The Association of Labor-Management Administrators and Consultants on Alcoholism, Inc., (ALMACA) submitted an extensive, recommended industry EAP in response to the ANPRM.

Although most commenters think that EAPs are valuable, employer and employee organizations differ on the mechanics and content of an EAP education and training component. Labor unions generally favor broad EAP services. The majority of employer organizations favor EAPs that are designed to meet the specific needs of the company and oppose regulatory action by the FAA in this area.

FAA Response. The FAA believes that an employer should have the ability to design an EAP that would best serve its employees. The ability to tailor an EAP is particularly important for small aviation employers who may not have the financial and administrative resources to support a company-sponsored EAP. Therefore, the FAA has made no changes to the proposed minimal EAP education requirements. However, the FAA has revised the EAP training requirements. The FAA deleted the minimum requirement of 60 minutes of annual training for all employees. The FAA retained the 60-minute training requirement for supervisors who will make determinations to test an employee based on reasonable cause. The FAA believes that it is appropriate to require a full 60 minutes of initial training for presently-employed and newly-hired supervisors making reasonable cause determinations because of the need for increased awareness and recognition of signs that may indicate drug use. The employer has the discretion to determine the reasonable recurrent training for supervisory personnel who have the authority to make reasonable cause determinations. The FAA believes that this flexibility will enable employers to address specific issues or needs that may arise as a result of the employer's anti-drug program.

The rule permits an employer to develop and provide these minimum services as part of an internal program or the employer may contract with community agencies or other aviation companies to provide these services to employees. The employer is permitted to provide additional education and training, beyond the minimum requirements of the rule, to its employees. The FAA believes that employers will not have substantial difficulty developing education and training programs for employees because of the significant number of model EAPs submitted to the FAA in response to the ANPRM.

Small Aviation Entities and Businesses

The National Air Transport Association (NATA) represents numerous Part 135 certificate holders in the aviation industry. NATA states that the anti-drug program would have significant cost impact on Part 135 certificate holders and, particularly, small aviation operators. NATA recommends that

Part 135 certificate holders, with 100 or fewer covered employees should be excluded from the requirement to submit and implement an anti-drug program. A number of other small Part 135 certificate holders responding to the NPRM also argue for exclusion from the anti-drug program.

AOPA urges the FAA to exempt from the rule operators and their employees who currently are exempt from the requirements of Part 135. AOPA contends that these operators are invariably small businesses who would be unable to withstand the financial and administrative burdens of the proposed regulations. Several commenters involved in single pilot—single aircraft operations noted the difficulty of complying with most of the provisions of the proposed rules.

Atlantic Aero, Inc., a fixed base operation employing more than 100 people, and Sunwest Aviation support efforts to address the drug problem but state that modifications to the proposal are necessary to avoid an unjustified administrative and financial burden on small operators.

SSA feels that the proposed anti-drug program is inappropriate for small businesses that rely on student instruction as the economic base of activities or for certified flight instructors acting as independent contractors. SSA believes that the FAA has failed to account for the practical differences between large corporate entities and small businesses. SSA suggests that the FAA develop four separate anti-drug programs that would address the particular needs and concerns of Part 121 certificate holders, Part 135 certificate holders, flight schools, and small businesses or independent contractors.

A commenter speaking as national litigation counsel for AOPA and on behalf of the California Aviation Council and the Orange County Aviation Association, conveys the concerns of flight instructors, small fixed base operators, banner towers, crop dusters, and other small aviation entities that do not provide scheduled air carrier service who are affected by the proposal. This commenter notes that the NPRM is an unwarranted, overreaching invasion of the domestic aviation community's right to be free from governmental intrusion because of the lack of evidence of any drug problem among commercial aviation professionals. The commenter states that this lack of evidence supports the history of responsible self-regulation by the commercial aviation community.

The National Association of Flight Instructors (NAFI) states that the anti-drug program proposed in the NPRM is tailored for a large aviation organization and, therefore, is not appropriate for a small organization or a freelance flight instructor that is not employed by any company. NAFI believes that testing of a flight instructor each time that instructor performs flight instruction duties will be impossible. In addition, NAFI is concerned about the quality and reliability of laboratory analysis; the constitutionality of drug testing; and the administrative and economic burden on small entities related to EAP services, MRO requirements, and job security for employees enrolled in rehabilitation. Two individual commenters believe that sole-proprietorships and businesses that employ 10 or fewer employees should be excluded from any requirement to implement an anti-drug program.

FAA Response. The FAA understands the economic and practical concerns expressed by Part 135 certificate holders as well as those entities or individuals, listed in § 135.1(b), who are otherwise exempt from the requirements of Part 135 but are affected by the regulation because they are engaged in operations for compensation or hire. For the purposes of the requirements of the anti-drug program, the FAA has tailored the final rule in an attempt to accommodate small aviation entities, particularly those Part 135 certificate holders who employ 50 or fewer employees who are covered by this final rule and those entities or individuals, listed in § 135.1(b), who are otherwise exempt from the requirements of Part 135 but are included in the comprehensive anti-drug program because they conduct operations for compensation or hire.

The FAA believes that it would be counterproductive to the goals of the anti-drug program to impose requirements on small aviation entities who would be unable to comply with them because of substantial financial, administrative, and logistical difficulties. The vast majority of the difficulties are associated with the requirements of implementing a random testing program and providing rehabilitation programs and services to employees. Therefore, the FAA has revised the proposed rule to provide a tiered implementation plan that would allow small aviation entities to develop and implement a comprehensive anti-drug program, over specific time periods, in accordance with a schedule determined by the FAA. The language of the rule does not prohibit an employer from implementing its anti-drug program sooner than required by the FAA's schedule if the employer is able to comply with the rule requirements and the provisions of its anti-drug program at an earlier date.

Part 121 certificate holders and Part 135 certificate holders that have more than 50 covered employees, and contractors to these certificate holders, will be required to follow the schedule that was proposed in the NPRM with one exception. As proposed, these employers must submit an anti-drug plan to the FAA not later than 120 days after the effective date of the rule and must implement the anti-drug program not later than 180 days after approval of the anti-drug program by the FAA. However, these employers are required to implement preemployment testing of applicants for sensitive safety- or security-related positions not later than 10 days after approval of the employer's anti-drug plan by the FAA. The FAA believes that it is appropriate to require accelerated implementation of preemployment testing for these employers because many of these employers have existing preemployment testing programs and, generally, these employers have the available financial and administrative resources that enable them to begin testing.

Part 135 certificate holders that have 11 to 50 covered employees, and contractors to those certificate holders, will be required to submit an interim anti-drug program, that sets forth all required drug testing except mandatory random drug testing, not later than 180 days after the effective date of the final rule. The employer must implement preemployment testing, periodic testing, postaccident testing, testing based on reasonable cause, and testing after an employee's return to duty not later than 180 days after approval of the anti-drug program by the FAA. These employers must submit an amendment of their interim anti-drug program to the FAA, that contains the procedures for implementing an unannounced testing program of employees who are randomly selected at the applicable annualized testing rate, not later than 120 days after approval of the interim anti-drug program by the FAA. The employer must continue implementation of the remainder of the program and must implement the random testing provision not later than 180 days after approval of the amended anti-drug program by the FAA.

Part 135 certificate holders with 10 or fewer covered employees and those entities or individuals, listed in § 135.1(b), who are otherwise exempt from the requirements of Part 135 but are included in the comprehensive anti-drug program because they conduct operations for compensation or hire, and any contractors to these employers, must submit an anti-drug plan to the FAA for approval, that includes procedures for all types of testing mandated by the rule, not later than 360 days after the effective date of the final rule. These employers must implement the approved anti-drug program not later than 180 days after approval of the plan by the FAA. The FAA believes that this extension of time will enable small aviation entities to evaluate random drug testing programs of other companies, to develop an appropriate method by which to comply with the drug testing provisions of the rule, and to participate in any association or consortium that may be available to provide specimen collection, testing assistance, and EAP services. Also, the FAA believes that it is appropriate to require these employers to submit a plan that includes random testing, as opposed to implementation of random testing after other testing is implemented, because these employers will have a significant amount of time to develop and implement a comprehensive anti-drug program for their employees.

New aviation businesses that come into existence after the effective date of the rule, and that are subject to the requirements of the final rule, will be required to comply with the schedule that is appropriate for the size of the company and their particular operations. The FAA believes that it is appropriate to adhere to the same time schedules that are set forth for existing aviation entities in order to treat similarly-situated entities in a similar manner. However, it is possible that the timeframes may be accelerated for new businesses in the future as existing employer programs and consortia develop and continue to provide services to the aviation community.

The FAA has identified an issue that could unduly burden small commercial operators who do not hold a Part 121 certificate or a Part 135 certificate, who conduct operations listed in § 135.1(b), and who are included in this final rule because they conduct operations for compensation or hire. Under the terms of the proposed rule, these commercial operators would have been unable to contract for aircraft maintenance or preventive maintenance services. The proposed rule would have prohibited commercial operators from using the services of employees who work for fixed base operators and repair stations that service only general aviation aircraft if the employees of these entities were not subject to an FAA-approved comprehensive anti-drug program. In an effort to relieve this unintended burden, the FAA has included a new provision in the final rule directed solely at those individuals or entities. This provision states, in essence, that an individual who is otherwise authorized may perform maintenance and repair work on a commercial operator's aircraft, even if that individual is not covered by a comprehensive anti-drug program, in two specific instances. First, an individual who is not covered by the final rule can perform emergency repairs on an aircraft if the aircraft could not be operated safely to a location where a covered employee could perform the repairs. Second, an individual who is not covered by the final rule can perform aircraft maintenance and preventive maintenance repairs on an aircraft if the operator would be required to transport the aircraft more than 50 nautical miles further than the closest available repair point from the operator's principal base of operations in order to have the work performed by a covered employee. The FAA believes that this narrow exemption from the requirements of the final rule will benefit the small commercial operators subject to the final rule but will not adversely affect the enhanced aviation safety intended by the final rule.

Medical Review Officer (MRO)

Several small entities, including EAF, believe that an MRO should have the responsibility to determine if an employee has been successfully rehabilitated and to determine when an employee may return to duty. ATA also recommends that an MRO be involved in the determination of an employee's successful rehabilitation. However, ATA notes that it would not always be feasible for an MRO to personally interview each employee who has a positive test result and recommends that the final rule accommodate that situation. RAA and Federal Express oppose any regulatory provision that would require an airline to appoint or to designate an MRO as part of an anti-drug program.

APFA believes that an MRO should be an independent physician who could assist labor and management EAP officials during analysis of drug test results and determination of the validity of test results in each employee's case. AFA believes that it is imperative that an MRO have specific training in toxicology and addictive diseases. Even with this training, AFA believes an MRO should be responsible for monitoring any testing program and interpreting test results to determine if referral to an EAP is warranted for a particular employee. AFA states that evaluation and referral for treatment and determinations regarding an employee's readiness to return to work should be made only by an EAP treatment professional. IUFA states that only the health care professional with whom an employee has been working is qualified to make a determination of when an employee is fit to return to duty. If an MRO and the responsible health care official disagree, a neutral third party should evaluate an employee and determine if an employee is fit to return to work. ALPA states that the determination of whether an individual has been rehabilitated, at least in the case of pilots, must be made by the Federal Air Surgeon under the medical certification procedures contained in Part 67 of the Federal Aviation Regulations.

FAA Response. In response to commenters who oppose the requirement to designate or appoint an MRO, the FAA notes that the rule does not require that each employer have its own individual MRO. The FAA anticipates that small companies will become part of, or will associate with, large companies or may participate in a consortium of small companies or associations, in order to comply with the MRO requirement of the final rule that will result in reasonable costs to small employers.

After consideration of the comments on the issue of MROs, the FAA has determined that the requirements proposed in the NPRM are appropriate. The FAA believes that the review and evaluation functions of an MRO provide critical and necessary safeguards for an employee who is subject to drug testing under the comprehensive anti-drug program. The FAA believes that the MRO will prove to be a beneficial asset to both employees and employers who are subject to the provisions of the final rule.

However, the FAA has expanded the role of the MRO after review of the comments and the proposed rule, although many of these responsibilities are contingent on an employer's decision to be involved in rehabilitation. For example, if an employer chooses to use an individual to perform a sensitive safety- or security-related function who has failed a drug test under this program and who has successfully completed rehabilitation, the MRO will develop an unannounced testing schedule for that individual. The MRO is the final arbiter in cases where an individual disputes a testing schedule after return to duty. Except in cases where the Federal Air Surgeon is involved, as discussed below, the MRO also is the final arbiter regarding return-to-duty recommendations. The MRO also shall review any rehabilitation program in which an employee or an applicant participated, after failing a drug test conducted in accordance with Appendix I to Part 121, to determine if an employee can return to duty or an applicant may be hired to perform a sensitive safety- or security-related function for an employer.

The FAA also has defined the factors that an MRO shall consider when making a return-to-duty determination. The MRO is required by the final rule to ensure that an individual is drug free as evidenced by a drug test; that an individual has been evaluated by a rehabilitation counselor for drug use or abuse; and that an individual has complied with testing and counseling requirements of a rehabilitation program. Thus, the MRO will have significant and sufficient information to recommend, based on the MRO's professional opinion, that an individual or a current employee could perform a sensitive safety- or security-related function for an employer.

The FAA clarified the proposed requirement that the MRO "conduct a medical interview" with an employee as part of the review of a positive test result. The FAA did not intend that the proposal require a face-to-face interview with each employee. The final rule requires that the MRO provide an employee with an opportunity to discuss a positive test result with the MRO. Thus, for example, the MRO is permitted to discuss the positive test result with the employee by phone. The FAA believes that the clarification will relieve some administrative burdens on the MRO and employees in scheduling discussions of a positive test result. The FAA also added several requirements to the MRO's list of duties. First, the MRO is required to notify an employee of a confirmed positive test result within a reasonable time after verification of the result. Second, the MRO must process an employee's request to retest a specimen. The final rule provides that the employee's request to retest must be made in writing to the MRO within 60 days of notification of the confirmed positive test result.

In the NPRM, the FAA requested comment on who should make the decision that an employee had been successfully rehabilitated and could return to duty if the employee was drug free. ALPA specifically comments that return-to-duty determinations of pilots should be made by the Federal Air Surgeon consistent with the medical certification procedures contained in Part 67 of the Federal Aviation Regulations. Part 67 of the Federal Aviation Regulations define "drug dependence" as a ". . . condition in which a person is addicted to or dependent on drugs other than alcohol, tobacco, or ordinary caffeine-containing beverages, as evidenced by habitual use or a clear sense of need for the drug." After review of the comments and consideration of the medical standards contained in Part 67, the FAA has determined that the Federal Air Surgeon must be involved in the decision to return an individual who holds a Part 67 medical certificate to a sensitive safety-related position. The FAA believes that it would be contrary to the statutory mandate to determine the physical ability of an individual to perform duties pertaining to his or her airman certificate if the FAA failed to participate in a return-to-duty decision for an individual who holds a medical certificate.

Thus, the FAA has clarified the responsibilities of the MRO for situations where an employer voluntarily becomes involved in rehabilitation of employees or persons hired to perform sensitive safety- or security-related functions that require an individual to hold a medical certificate issued by the FAA. Under the rule, the MRO will perform all the duties and make all the determinations required in Appendix I for those individuals who do not hold a medical certificate issued pursuant to Part 67 of the Federal Aviation Regulations. For those individuals whose position with the employer requires them to hold a Part 67 medical certificate, the MRO is required to make a preliminary determination, consistent with the standard contained in Part 67, of probable drug dependence or a determination of nondependence. If the MRO makes a determination of nondependence based on his professional opinion, the MRO may recommend that an employee return to duty in a sensitive safety- or security-related position. The MRO is required to forward the finding of nondependence, the decision to return the employee to duty, and any supporting documentation, to the Federal Air Surgeon for review.

The FAA is aware that allowing an MRO to determine that an individual is not drug dependent and, therefore, may return to work in a sensitive safety- or security-related position without prior clearance by the Federal Air Surgeon may be controversial and may be viewed as inconsistent with aviation safety. However, in the FAA's opinion, it is consistent with aviation safety to provide subsequent FAA review of the treatment and any medical determination of nondependence that has been made by a competent licensed physician with knowledge of substance abuse disorders. The FAA also believes it is beneficial to provide subsequent review of an MRO's return-to-duty determinations, rather than initial review by the Federal Air Surgeon, so that an individual who is not dependent on drugs can return to work as soon as possible. Moreover, any individual who returns to work after rehabilitation is subject to unannounced testing as determined by the MRO and may be subject to ongoing counseling. Therefore, the FAA believes that initial determinations by an MRO and subsequent review by the Federal Air Surgeon will result in effective and fair treatment of individuals who are required to hold a medical certificate.

At any point that an MRO, in his professional opinion, makes a determination of probable drug dependence of an individual required to hold a medical certificate for a position, the MRO is required to report the name and other identifying information, and to forward all documentation that supports the determination, to the Federal Air Surgeon. If the MRO has made a probable drug dependence determination of an individual required to hold a medical certificate, the MRO may not make a recommendation to return that individual to duty. From that point forward, the Federal Air Surgeon is responsible for determining whether the individual may keep a medical certificate or may be issued a medical certificate consistent with the medical standards contained in Part 67 of the Federal Aviation Regulations. Since drug dependency is a disqualifying medical condition under Part 67 of the Federal Aviation Regulations, it is critical that the Federal Air Surgeon be aware of any determination of probable drug dependence. An individual subject to the medical requirements of Part 67 who has a history of drug dependency must receive a "special issuance" medical certificate, issued at the discretion of the Federal Air Surgeon pursuant to § 67.19, before returning to work in a sensitive safety-related position. The Federal Air Surgeon is required to determine if that individual is qualified to hold a medical certificate and is physically able to exercise the privileges of an airman certificate. This determination, and the discretion to grant a special issuance of a medical certificate, clearly are within the exclusive expertise of the Federal Air Surgeon.

The FAA has added a provision to the final rule that requires the MRO to report the name of any current employee required to hold a medical certificate to perform a sensitive safety-related function who fails a drug test. The MRO also is required to report the name of any individual who holds a medical certificate and applies for a position with the employer in which a medical certificate is required and who fails a preemployment drug test. The MRO is required to report the names of these individuals to the Federal Air Surgeon because a positive drug test result clearly is probative evidence of possible drug dependence which is a disqualifying condition under the medical standards of Part 67 of the Federal Aviation Regulations. Therefore, the FAA added this requirement to ensure that the FAA is aware of conditions that may affect an individual's ability to physically perform the duties of an airman.

Administrative Matters and Reporting and Recordkeeping Requirements of Appendix I to Part 121

The FAA received very few comments regarding the reporting requirements of the proposed rules. ATA found the requirements of Appendix I to be acceptable. ATA recommended that the FAA establish a date to analyze the data collected regarding drug testing and rehabilitation and to review the regulations. Suburban Airlines, as part of its analysis of the costs of the proposals, estimates that the administrative costs and record retention costs of testing its 211 employees would be $8,500 per year. Federal Express supports auditing of annual, summary data by the FAA that is supplied by an employer regarding the employer's anti-drug program. Federal Express does not object to submitting an anti-drug program for the FAA's approval but believes that the 180-day implementation period will be insufficient if the final rule contains all of the requirements proposed in the NPRM.

FAA Response. The regulatory provisions that require an employer to submit a comprehensive anti-drug program and summary reports of the employer's program are critical measures to provide oversight of the industry's implementation of the comprehensive anti-drug program. The FAA believes that these minimal requirements are necessary to properly monitor the industry and to ensure compliance with the final rule. In addition, evaluation of the industry's implementation of the anti-drug program and the results of testing and rehabilitation programs will enable the FAA to review any demonstrated trends of drug use in the aviation industry and to modify the rules if warranted by the data. These reporting requirements are consistent with the FAA's existing industry recordkeeping and reporting requirements.

The FAA has modified the proposed recordkeeping and reporting provisions in the final rule. First, the FAA has clarified the requirements and organization of material that must be submitted in the employer's semi-annual report and annual report. In order that the FAA may accurately assess information submitted by an employer, the revised final rule provides that the employer must submit the total number of tests performed; the total number of tests performed for each category of test; and the total number of positive test results for each category of test given by an employer. These requirements are in addition to the proposed requirement to provide information on the number of positive test results according to the function performed by an employee for each type of test and according to the type of drug indicated by a positive drug test result. The FAA anticipates that requiring an employer to report the additional information will not overburden an employer because drug testing laboratories commonly report the bulk of this information when reporting drug test results. For example, as part of the DOT procedures (49 CFR Part 40), a DHHS-certified laboratory is required to provide a monthly statistical summary of initial and confirmation urinalysis testing data of employees tested during the month to the person responsible for coordination of the drug program. The summary contains information on the number of specimens received for initial and confirmation testing; the number of specimens reported for initial testing; and the number of specimens reported positive for each of the five drugs or drug metabolites tested during initial and confirmation testing [DOT "Procedures for Transportation Workplace Drug Testing Programs;" 49 CFR Part 40].

The FAA had proposed that an employer only keep records relating to the specimen collection process in the NPRM. However, in light of other revisions to the proposed rule made in response to the comments, the employer also must retain records of test results and records relating to any employee rehabilitation. For example, the MRO is required to report the names of individuals holding a Part 67 medical certificate who fail a drug test and to forward test result and rehabilitation information regarding all individuals holding a medical certificate to the Federal Air Surgeon. Thus, the FAA has revised the recordkeeping provision of the proposed rule to require that an employer keep adequate information with which an employer and the FAA can evaluate the anti-drug program and determine any trends that may develop in the commercial aviation industry. Pursuant to the final rule, an employer is required to retain all confirmed positive test results and any rehabilitation records for five years. The employer may retain these records longer than five years although extended record retention is not required by the final rule. The FAA also added a provision to the final rule that requires an employer to keep any negative test result for a period of 12 months. However, all records retained by the employer are subject to limited release, as discussed below, for any period of time that the employer keeps these records.

Confidentiality of Test Results

Most small businesses, individuals, and labor unions support restrictions on the release of drug testing information. These commenters believe that the FAA should include a regulatory provision prohibiting the release of any drug testing information about an employee.

RAA believes that only the employer and the employee should have access to the results of the anti-drug program. Conversely, ERA Aviation suggests that employers should be required to report the names, social security numbers, and certificate numbers of employees testing positive to the FAA. TWU states that test results should be confidential as to all persons, except an applicant or employee, absent written consent or valid compulsory process. The laboratory may release confirmed positive test results or negative test results only to the employer's medical officer. TWU suggests that the medical officer may notify managerial or supervisory personnel who have a compelling need for the information to implement employer's policies or may notify the medical personnel responsible for an employee's rehabilitation.

RAA and Federal Express believe that job applicants should be required to disclose prior drug test results to subsequent employers as a condition of employment. ATA believes that records of applicants for employment who have tested positive in a preemployment drug test should be disclosed to third persons in limited situations, including authorization from the applicant, litigation by the applicant, pursuant to a valid subpoena, and by order of a court or administrative agency. However, ATA believes that test results, related personnel records, and rehabilitation data of incumbent employees should not be released to any person absent express consent of the employee. The Director of the Santa Maria Public Airport District believes that positive test results of all employees and applicants should be retained in a central database and should be available to potential aviation employers. Federal Express also believes that carriers should be free to exchange an employee's drug testing results and that the FAA should insulate carriers from liability for this disclosure.

ALPA states that information regarding an employee's drug testing history should be treated as confidential information, and clearly stated in any final rule, since it is "extracted" from the employee by requiring the employee to submit to drug testing. A rule of confidentiality should apply to all information obtained pursuant to the regulation whether obtained as a result of testing, interview, or examination, or treatment of an employee. ALPA believes that the only effective and appropriate rule is a complete ban on disclosure of confidential drug testing information without the employee's written consent. ALPA believes that a complete ban on disclosure is required for ethical reasons and to encourage candor by employees when dealing with medical professionals.

As a general matter, EEAC advocates protecting the privacy of individuals who undergo drug tests. EEAC believes that sharing of drug testing information among employers in a safety-sensitive industry has superficial appeal. However, EEAC advocates caution in allowing a subsequent employer to rely solely on information obtained as a result of a different company's drug testing procedures.

FAA Response. The FAA has included a provision in the final rule that will govern release of records of an employee's drug testing results and any rehabilitation information. The FAA has decided that the legitimate individual privacy rights of an employee warrant strict limitations on the availability of an employee's drug testing results and rehabilitation information. The final rule provides that the release of an individual's drug test results and any information about an employee's rehabilitation program is permitted only with the specific, written consent of the individual. Due to the specific provisions discussed previously, this restriction does not override the requirement to report test results and any rehabilitation information to the Federal Air Surgeon of an applicant or an employee who holds a medical certificate who fails a drug test. The final rule also provides that the FAA is entitled to examine these records and that this information must be released to the NTSB as part of an accident investigation or to the FAA upon request.

Temporary Employees

The FAA solicited comments in the NPRM on the proposed definition of temporary employees and their eligibility for rehabilitation. RAA agrees with the FAA's proposed definition that temporary employees are those individuals who are hired for a period of less than 90 days. ATA and Federal Express propose a period of 120 days and TEMSCO Helicopters proposes a period of 150 days or less to determine an employee's eligibility for rehabilitation opportunities.

RAA and ATA agree with the FAA's proposal to exclude temporary employees from rehabilitation opportunities. RAA and ATA oppose the FAA's proposal to consider employees, who are eligible for reemployment by the same employer within 90 days following the original employment, as regular employees of the industry and, therefore, eligible for rehabilitation opportunities if they are rehired by the airline.

Several organizations, including TEMSCO Helicopters and ATA, comment that the time period of 90-day employment would adversely affect businesses who employ individuals on a seasonal or contract basis for longer periods of time. SSA states that small businesses should not be required to retain or to rehire a part-time or temporary employee who volunteers for, or otherwise participates in, rehabilitation.

FAA Response. In the NPRM, the FAA requested comment on the definition of a temporary employee and whether employers should be required to offer rehabilitation opportunities and job security to temporary employees. After consideration of the comments and due to deletion of the requirement to offer rehabilitation and job security to employees, a definition of temporary employees in the final rule is unnecessary. Therefore, an employer is not required by the rule to offer an opportunity for rehabilitation or to hold a position open for any temporary employee.

However, the final rule makes no distinction regarding testing of temporary employees. Thus, an employer is required by the final rule to include temporary employees in its drug testing program. The burden of testing temporary employees is slight when compared to the significant risk that a temporary employee who uses drugs poses to aviation safety. Thus, the FAA believes that it is important to test temporary employees for the presence of drugs or drug metabolites that may adversely affect performance of a sensitive safety- or security-related function. Many "temporary" employees, who actually are recurring seasonal employees or are regularly and continually rehired at the end of specified term, are "permanent" members of the aviation industry. The FAA firmly believes that these individuals clearly should be included in an employer's drug testing program in the interest of aviation safety. In addition, these employees, although they may consistently perform sensitive safety- or security-related functions pursuant to short-term contracts for a different employers, should be included in EAP education programs because of their continuous involvement in commercial aviation activities.

Uniformity versus Flexibility

ATA, American Airlines, Delta Airlines, IUFA, and IFFA believe that all employers and employees should be subject to uniform minimum rules and requirements in the area of drug testing. These entities strongly believe that company-specific plans may dilute the effectiveness of the anti-drug program or lead to harassment of employees.

EEAC supports the concept of employer flexibility to design specific anti-drug programs. EEAC believes that each employer should determine the circumstances of employee drug testing and the content of employee assistance programs. EEAC supports preemployment testing, postaccident testing, periodic testing incident to scheduled physical examinations, and testing based on reasonable cause. EEAC believes employers should have the option of requiring random testing of employees.

EEAC readily endorses EAP services and rehabilitation of employees but believes that these benefits should not be mandated by the government. Decisions whether an employee has been rehabilitated and whether an employee should be permitted to return to work should be determined by the individual employer acting with the guidance of professionals involved in an employee's rehabilitation.

Federal Express believes that use of controlled substances at any time, whether on or off the job, should be prohibited due to the critical safety concerns in the aviation industry. Federal Express states that such a prohibition ". . . helps ensure safe operation of aircraft and protects employees and the general public from unnecessary safety hazards." However, Federal Express believes that the FAA should impose only minimum regulatory requirements of a drug testing and rehabilitation program and allow carriers to structure individual programs for their particular employees.

FAA Response. The FAA agrees with the commenters who conclude that mandating minimum, uniform requirements for comprehensive anti-drug programs in the commercial aviation industry is necessary in order to maximize the effectiveness of the program and to achieve a safe and drug-free commercial aviation workforce. The FAA believes that the comprehensive anti-drug program promulgated in this final rule meets the agency's statutory mandate to promote the safety of civil aircraft operating in air commerce and that it responds to the public's need for a safe aviation environment.

In response to the comments, particularly in the area of anti-drug programs implemented by small aviation entities, the FAA has addressed the need for employer flexibility by revising the program requirements or the implementation dates. The FAA has not included specific, detailed provisions regarding the content and requirements of an individual's treatment due to the significant variables that affect these components based on each individual, the type of drug used, and the level of any drug use, drug dependence, or drug addiction. Thus, in the area of an employee's rehabilitation treatment plan, the FAA agrees that this decision is best left to the discretion of those individuals who are significantly and directly involved in the employee's rehabilitation.

The FAA has imposed uniform, minimum requirements on employers and employees in other areas of the comprehensive program. Although employers are required to comply with the minimum requirements, employers may expand the minimum testing requirements to include other employees or may offer EAP services and rehabilitation opportunities to employees. If the employer expands its anti-drug program, any additional components of the employer's anti-drug program may not contradict or dilute the effectiveness of the FAA's final rule. As stated in the NPRM, while the FAA would not prohibit employers from taking independent actions beyond those required by the rule, such actions may not adversely affect the final rule and would not be authorized by the FAA. Therefore, additional benefits or more stringent procedures would not be considered part of the employer's approved program.

The FAA received many comments for revision of the final rule to include testing for additional drugs and permission for an employer to use analytical procedures that are not addressed in the DHHS guidelines. The Department of Transportation will address the issue of testing for additional drugs in the DOT "Procedures for Transportation Workplace Drug Testing Programs" (49 CFR Part 40). DOT intends to follow the proposed DHHS guidelines which allow testing for other drugs, in addition to the five drugs specified in the appendix, only in the context of testing based on reasonable cause. Neither this final rule nor the DOT procedures address the issue of an employer's ability to test for drugs, other than the drugs specified by the FAA, to the extent that an employer has independent legal authority to test for other drugs.

Regulatory Consent

AOPA believes that the FAA should eliminate the regulatory section that would require a pilot to submit to a drug test requested by an employer, a local law enforcement officer, or an FAA inspector. AOPA asserts that the FAA does not have the authority or the expertise to administer a drug test and that refusal to submit to a test is best left to local law.

ATA agrees with the sanctions proposed for an employee's refusal to submit to a required test. Henson Airlines has an existing policy that an employee's refusal to submit to a drug or alcohol test will result in disciplinary action that could include dismissal from the company.

FAA Response. The FAA has not revised the provisions proposed in the NPRM that would provide sanctions for an employee's refusal to submit to a drug test required as part of the comprehensive anti-drug program. The FAA believes that the sanctions proposed in the NPRM are appropriate and are necessary to ensure compliance with the requirements of the anti-drug program. In response to AOPA's comment, the FAA would not "administer" a drug test under this provision. The FAA would simply request that the employee submit to a drug test, collected and analyzed consistent with the DOT procedures of 49 CFR Part 40, where testing would be otherwise authorized under an anti-drug program. This provision is necessary primarily in the area of postaccident drug testing where the FAA may be the only official at the scene of an accident with the authority to request that an individual submit to a postaccident drug test.

The FAA also believes that compliance with the testing requirements of the final rule is not an issue that is best left to local law. As a preliminary matter, the FAA has clear statutory authority to promote and maintain aviation safety. Second, the FAA is the entity that issues airman certificates and that is charged with ensuring that an airman is qualified to exercise the privileges of that Federal certificate. Finally, sanctions imposed pursuant to State or local law may vary widely among each jurisdiction and would subject similarly-situated employees to dissimilar treatment according to the content of the local law. Therefore, the FAA believes that it is appropriate to provide that an individual is disabled from performing a sensitive safety- or security-related function and to include sanctions for a failure to submit to a drug test to promote aviation safety and to ensure consistent treatment of individuals engaged in commercial aviation.

Existing Regulations

AOPA, several small aviation entities, and many individual commenters believe that the FAA's existing regulations, and increased FAA enforcement of these regulations, are sufficient to deal with any drug problem in the aviation industry.

A commenter speaking as national litigation counsel for AOPA and on behalf of the California Aviation Council and the Orange County Aviation Association believes that the types of testing proposed by the FAA are duplicative of the existing opportunities for testing in the periodic medical examination of commercial and air transport pilots. In addition, this commenter states that the FAA has the authority, pursuant to § 609 of the Federal Aviation Act, to reexamine or reinspect any airman at any time. Therefore, the commenter believes that the FAA could implement a lawful drug testing program within the existing infrastructure of the FAA's certification procedures. The commenter also states that the regulations proposed in the NPRM create an irreconcilable conflict with the FAA's safety-enhancement enforcement system. The commenter believes that the proposed anti-drug program will prove detrimental to aviation safety because the number of enforcement cases brought by the FAA for violations of the proposed regulations will overburden the FAA and the administrative law judges assigned to hear enforcement cases.

FAA Response. The FAA disagrees with the commenters who state that the comprehensive anti-drug program requirements are redundant and that increased enforcement of the existing regulations or reexamination of individual airmen will result in a drug-free commercial aviation environment. The existing regulations do not address the issue of drug testing of aviation personnel performing sensitive safety- or security-related functions in commercial aviation. Thus, in the FAA's opinion, enforcement of existing regulations or individual reexamination will not sufficiently deter any drug use in commercial aviation. In addition, the existing regulations do not address the critical issues of procedural safeguards in collection and testing of samples for the presence of drugs or drug metabolites that are provided in the DOT procedures of 49 CFR Part 40.

Establishing a drug testing program within the existing "infrastructure" of the existing certification procedures is equivalent to implementing only a periodic testing requirement. Because of an individual's ability to circumvent periodic testing, based on a relatively short abstinence from drug use, periodic testing alone is not a sufficient deterrent to drug use in commercial aviation. The FAA believes that it is appropriate and necessary to provide minimum requirements, applicable to employers and employees, that will achieve a drug-free commercial aviation environment.

Preemption of State and Local Laws

ATA, Federal Express, and RAA recommend that the FAA insert a regulatory provision that explicitly proscribes State or local legislation that would interfere with the consistent and uniform testing and rehabilitation opportunities for aviation employees mandated by this final rule.

FAA Response. The FAA agrees with the commenters who are critically concerned about conflicting State and local laws that would interfere with an effective comprehensive anti-drug program. The FAA believes that inconsistent laws or regulations applicable to the subject matter of this final rule will frustrate the intent of the rule and severely hamper implementation and administration of an anti-drug program. Therefore, the FAA has included a preemption provision in the final rule that is intended to enhance the efficiency and effectiveness of the requirements of the final rule.

The FAA's issuance of the final rule preempts any State or local law, rule regulation, order, or standard that covers testing of commercial aviation employees for the presence of drugs or drug metabolites. The new rule does not preempt any State law that imposes sanctions for the violation of a provision of a State criminal code related to reckless conduct leading to actual loss of life, injury or damage to property, whether such provisions apply specifically to aviation employees or generally to the public. The scope of the authority preempted by this final rule and the authority reserved to the States is essentially identical to the provision in the regulations issued by the Federal Railroad Administration of the Department o Transportation (49 CFR 219.13)

Waivers or Exemptions

ATA believes that waivers and modifications of an employer's drug testing program should be granted if exceptional circumstances warrant the waiver or modification and if an equivalent level of safety can be maintained under the terms of the waiver. American Airlines advocates that all carriers should be subject to identical requirements and waivers should not be granted.

FAA Response. The final rule sets forth minimum requirements that must be included in an employer's anti-drug program. However, the rule generally does not set forth detailed program administration requirements in most areas of the program. Also, an employer is not prohibited from establishing an anti-drug program that goes beyond the minimum requirements promulgated by this rule. As a result of the FAA approval process of an employer's anti-drug program, a certain amount of discretion and flexibility is retained for an employer's administration of its anti-drug program.

On this basis, the FAA has determined that any requests for exemption from a requirement of this rule should be handled in the same manner as requests for exemptions of other FAA regulations under Part 11 of the Federal Aviation Regulations. The FAA believes that a case-by-case determination will be necessary to ensure that any exemptions from the requirements of this final rule are in the public interest.

Contractors

The FAA has revised the proposed rule as it applies to contractors whose employees perform sensitive safety- or security-related service for aviation entities subject to the rule. Under the proposed rule, contractors whose employees perform covered service to aviation entities were authorized to submit their own plans to the FAA to implement directly an anti-drug program. These contractor employees also could have been included in the anti-drug program of the aviation entity for whom they were providing services. However, for the final rule, the FAA concluded that all persons performing sensitive safety- or security-related functions should be under the plan of the aviation entity for whom they provide the services.

The FAA believes that administration of the anti-drug program would be vastly more efficient—for aviation entities directly subject to the rule, contractors, and the FAA—by reducing the proliferation of different plans submitted by a significant number of contractors who provide covered service to the same aviation entity. In addition, the FAA believes that limiting the submission of plans to those aviation entities directly subject to the rule will provide a more consistent approach to administration of industry anti-drug programs and will minimize the difficulties of ensuring compliance with the final rule. As noted earlier in this preamble, the final rule provides that an employee who is subject to the requirements of any employer's FAA-approved anti-drug program may provide sensitive safety- or security-related services to any other employer. Therefore, so long as a contractor employee is covered by one aviation entity's anti-drug program, the employee would be able to provide services for any employer subject to the rule. Thus, a contractor whose employees provide services to multiple aviation entities would not be subject to any greater burden than those entities directly subject to the rule.

Additional Issues

Alcohol. The NTSB, AMA, Henson Airlines, and other individual commenters suggest that the FAA include alcohol as a tested substance in any required testing program.

The FAA expressly excluded the issue of alcohol testing from this rulemaking for a variety of reasons stated in the NPRM; therefore, these comments are beyond the scope of this rulemaking. Excluding alcohol testing from this rulemaking should not be construed to mean that the FAA is ignoring the fact that alcohol may be a substance of widespread abuse in the aviation industry. As stated in the NPRM, the FAA will continue to review the effectiveness of regulations dealing with the issue of alcohol use and abuse in aviation and may consider additional rulemaking action in the future. In addition, employers are not prohibited from initiating alcohol testing programs for their employees if not otherwise prohibited from testing for alcohol.

The Department of Transportation will include a provision in the DOT procedures (49 CFR Part 40) that will enable an employer to test for the presence of alcohol in an employee's system. Pursuant to those procedures, the employer could include testing for alcohol in testing protocols only pursuant to FAA approval if the testing is authorized under the FAA regulations.

Testing for additional drugs. The NTSB recommends that the FAA expand the list of prohibited drugs to include those substances listed in Schedule III and Schedule IV of the Controlled Substances Act. The NTSB also recommends that the FAA develop a medical exemption process to provide for a pilot's legitimate medical use of these substances. ATA recommends that mind-altering prescription drugs, such as barbiturates, benzodiazepines, methadone, and methaqualone, also be listed as prohibited drugs in any drug testing program. ERA Aviation supports this recommendation and suggests that propoxyphene, quaaludes, and codeine be added to the list of drugs that would be screened.

The five drugs specifically listed in Appendix I to Part 121 are the five drugs for which DHHS has set cutoff levels and testing protocols in its mandatory guidelines (53 FR 11970, 11973-11974; April 11, 1988). The Department of Transportation intends to adopt these cutoff levels and testing protocols verbatim in its procedures applicable to the aviation industry (49 CFR Part 40). An employer is required to test for marijuana, cocaine, opiates, phencyclidine (PCP), amphetamines, and metabolites of those drugs because of the incidence and prevalence of use of these drugs in the general population and based on the experience of the Department of Defense and the Department of Transportation in their drug testing programs. Because analysis of additional, less-frequently used drugs could result in substantial additional expense, the FAA believes that requiring an employer to test for these five drugs is appropriate at this time. Any testing for other drugs, beyond the specified drugs listed in the appendix, is authorized only in the context of testing based on reasonable cause. Only if, in that context, the FAA authorizes testing for additional Drug X under 49 CFR Part 40 (an approval which would be granted only after consultation with the Department of Health and Human Services, and only on the basis of an HHS-established testing protocol and positive threshhold) may the employer also test the sample for that drug.

Absent such an approval, if the employer wants to test, in addition, for Drug Y, the employer must obtain a second sample from the employee. The obtaining of this second sample is not under the authority of the DOT regulation. The employer must base its request for the second sample on whatever other legal authority is available, since the employer cannot rely on the DOT regulation as the basis for the request.

The FAA is aware that listing the drugs that will be analyzed as part of a drug testing program may result in individuals using alternative drugs that are not analyzed pursuant to the final rule. As part of the agency's review and analysis of the industry's anti-drug programs, the FAA encourages the aviation industry to notify the FAA if different drugs are being used in the aviation community. As part of the FAA's oversight of the comprehensive anti-drug program, the FAA will seek statistical information, to the extent any information is available, from the National Institute on Drug Abuse (NIDA), other Federal agencies, and any other source to determine if additional, different drugs should be included in the comprehensive anti-drug program to ensure aviation safety.

Testing of other individuals. Several commenters, including the AMA, NTSB, ATA, and ALPA, suggest that the FAA expand the list of individuals to be tested, or defined as sensitive safety- and security-related employees, under the regulations. Several entities recommended that the FAA require testing of all individuals certificated by the FAA, including general aviation pilots. ALPA, ATA, and Martin Aviation recommend that any employee who performs a function in or around an aircraft (deicing, weight and balance computation, fueling, taxiing or towing aircraft, weather forecasting, baggage handlers, and cargo personnel) and supervisors of covered employees be subject to testing because these individuals affect aviation safety. Federal Express states that it would include ramp agents responsible for weight and balance of an aircraft, deicers, and fuelers in a drug testing program. Federal Express supports inclusion of aviation security screeners in a drug testing program although it does not employ these individuals. ALPA and American Airlines also urge the FAA to include corporate officers in any testing program. The Director of the Santa Maria Public Airport District suggests that the FAA amend Part 107, Part 108, and Part 139 to ensure that employees of certificated airport operators are included in the anti-drug program. Tramco, Inc. suggests that Part 145 be amended so that repair station employers are required to comply with the anti-drug requirements in the same manner as Part 121 certificate holders. Tramco also suggests that aircraft manufacturers be required to implement an anti-drug program.

After review of these various comments, the FAA has retained the basic regulatory list of functions proposed in the NPRM. However, the FAA has eliminated parachute rigging duties from the list of functions contained in Appendix I to Part 121. The activities performed by parachute riggers do not have a direct and significant impact on the safe operation of civil aircraft as do the other sensitive safety- and security-related functions listed in the appendix.

The FAA has not revised the rule to require drug testing of supervisory or managerial employees. However, the FAA notes that under the proposed rule and the final rule, supervisory or managerial employees who perform sensitive safety- or security-related functions for an employer are not permitted to perform these functions, either on a permanent or temporary basis, unless those employees are subject to the requirements of the employer's anti-drug program. Also, repair station employers and employees are subject to the requirements of an anti-drug program if these individuals provide contract service to an employer who is subject to the requirements of this final rule. Under the terms of the rule, a Part 121 certificate holder, a Part 135 certificate holder, or an entity or individual covered by the rule because they operate for compensation or hire may only use the services of persons who are subject to the requirements of an FAA-approved program. Therefore, although Part 145 was not amended, repair station employers and employees are included to the extent that they provide contract service or repair aircraft operated by an employer subject to the final rule.

The comprehensive anti-drug programs, proposed by the operating administrations within the Department of Transportation, focus on drug testing for various commercial transportation activities. The scope and direction of the FAA's comprehensive anti-drug program is consistent with the present Department-wide policy.

The FAA encourages the public and members of the aviation industry to submit information to the FAA (directed to the person listed in the heading FOR FURTHER INFORMATION CONTACT) that may warrant inclusion of different drugs in a drug testing program or additional categories of employees to be tested. If it is necessary to preserve confidentiality of any information submitted to the FAA, the FAA encourages aviation industry representatives or trade associations to transmit the information to the FAA. The FAA will monitor the data gathered pursuant to this program, and will continue to review other information regarding drug use in private and commercial aviation, to determine if further rulemaking action in this area is required or necessary. The FAA may revise other sections of the Federal Aviation Regulations, to broaden the applicability and scope of the comprehensive anti-drug program, if further study warrants this action. The final rule does not prohibit an employer from testing any other employee or group of employees, if the employer is not otherwise prohibited, that the employer determines should be tested for drugs to provide safety or efficiency in the workplace.

Conflict with foreign laws or policies. We have determined not to make the rule applicable in any situation where compliance would violate the domestic laws or policies of another country. In addition, because of the potential confusion that may exist involving application of this rule in situations where compliance could violate foreign laws or policies, we have determined not to make the rule applicable, until January 1, 1990, in any situation where a foreign government contends that compliance with our rule raises questions of compatibility with its domestic laws or policies. During the next year, the Department of Transportation and other U.S. government officials will be working closely with representatives of foreign governments with the goal of reaching a permanent resolution to any conflict between our rule and foreign laws and policies. The U.S. and Canadian Governments have already established a bilateral working group in an attempt to achieve this objective. We believe that considerable progress has already been made, and further meetings will be held in the near future. While we believe that this can be a model for addressing the concerns of other countries, it is not intended to be the exclusive means. The Administrator may delay the effective date further under this section, if such delay is necessary to permit consultation with any foreign governments to be successfully completed.

It is the agency's intention to issue a notice no later than December 1, 1989, that would make any necessary amendments to the rule as a result of discussions with foreign governments. Shortly after their issuance, any such notices will be published in the *Federal Register*. While we recognize that any decision not to apply our rule to foreign citizens has the potential to create some anomalous conditions in competitive situations, it is the intention of the U.S. Government to make every effort to resolve potential conflicts with foreign governments in a manner that accommodates their concerns while ensuring the necessary level of safety by those we regulate.

Statutory authority. One commenter questions the authority of the FAA to promulgate regulations that proscribe recreational drug use by any airman during his or her free time that does not impair the airman's performance on the job. As stated by the commenter, the FAA's mandate is to ensure the safety of civil aviation and not to enforce criminal drug enforcement laws.

The FAA clearly has the statutory authority to mandate continuing eligibility requirements and minimum physical and medical standards to promote and develop safety in air commerce and civil aeronautics. For example, the FAA has clear authority to prohibit off-duty consumption of alcohol prior to aircraft operation to ensure that a crewmember is not impaired by alcohol while acting or attempting to act as a crewmember of a civil aircraft. Similarly, in the FAA's opinion, this broad authority includes the authority and ability to prohibit the presence of any drug or drug metabolite in an individual's system that may adversely affect aviation safety.

As noted in the NPRM, it often is difficult to detect the subtle and varying degrees of drug impairment to motor skills and judgment that are critical to aircraft operation or performance of sensitive safety- and security-related duties. Certain drugs or drug metabolites remain in an individual's system long after use and may impair an individual's subsequent performance. Indeed, the Vice President of a national firm providing consultation services on drug abuse prevention to American Airlines, with significant experience in identification and treatment of drug users, states that marijuana use disrupts recall and short-term memory and that there is serious impairment of skills appropriate to industrial operations for 10 to 12 hours after smoking a single marijuana cigarette. The FAA believes that it is clearly in the public interest and within the FAA's statutory authority to ensure that any "hangover effect" associated with recreational use of illegal drugs does not interfere with an individual's performance and, thus, jeopardize air safety.

Summary of Significant Changes from the Proposed Rule

The FAA amended several sections of the proposed rule in response to comments received from the public on the issues and in response to questions raised in the NPRM. Any changes that significantly altered the requirements of the anti-drug program are discussed previously and are summarized in this section.

The definition of an "employee" in Appendix I to Part 121 was amended to make it clear that employees of an entity that holds both a Part 121 certificate and a Part 135 certificate are to be considered employees of the Part 121 certificate holder. This will ensure that all employees of a single entity, regardless of the type of operating certificate held by the employer, are subject to the same requirements and time schedules for the purposes of an anti-drug program.

The definition of "employer" also was amended. This section was amended to make it clear that an employee of one company that has implemented an anti-drug program may perform sensitive safety- or security-related functions for another employer. For example, a mechanic employed by American Airlines, who is covered by American's anti-drug program, is permitted to perform maintenance duties or repair work on an aircraft owned by United Airlines.

The Department of Transportation has determined that certain modifications of the DHHS guidelines, proposed in the NPRM, are appropriate for this rulemaking. The FAA has referenced a DOT interim final rule (49 CFR Part 40), entitled "Procedures for Transportation Workplace Drug Testing Programs," in this final rule.

The FAA did not revise significantly the section of the appendix regarding the substances for which testing must be conducted. However, the appendix provides that testing for drugs listed in Schedule I and Schedule II of the Controlled Substances Act is permitted only during testing based on reasonable cause. In addition, the testing must be conducted in accordance with the DOT "Procedures for Transportation Workplace Drug Testing Programs" and pursuant to the employer's approved anti-drug program.

The FAA clarified the preemployment testing provision to make it clear that an employer may use a person to perform a sensitive safety- or security-related function who passed a previous preemployment drug test for an employer and has continuously been subject to testing under an approved anti-drug program even if the individual is not currently employed by that employer. The rule prohibits an employer from "hiring" any person after failing a preemployment drug test. The rule does not require an employer to test every applicant but only to test an applicant before he or she is actually hired by the employer.

The periodic testing provision was revised to make it clear that an employee is only required to provide one specimen for testing during the employee's first periodic medical examination in the first calendar year of implementation of the final rule. Also, this section was revised to enable an employer to discontinue periodic drug testing of employees as part of a medical examination after the first full calendar year of implementation of the employer's anti-drug program. After the first year of implementation, the employer's random testing program should be fully implemented and periodic testing as part of a medical examination may be eliminated.

The FAA revised the random testing provision of the final rule in response to the comments and with reference to the plans of the random testing program started by the Department of Transportation. The final rule provides for phased implementation of unannounced testing based on random selection beginning with an annualized rate equal to 25 percent of covered employees during the first 12 months of program implementation. Thereafter, the employer must achieve and maintain an annualized testing rate equal to 50 percent of the covered employees. The FAA also added a provision that would enable an employer to randomly select employees for unannounced testing based on a method, other than the methods originally proposed in the NPRM, that has been approved by the FAA.

The FAA has amended the postaccident testing provision. The revised section requires an employer to ensure that postaccident testing is conducted as soon as possible but not later than 32 hours after an accident.

As discussed previously, the FAA has expanded the bases upon which an employer may substantiate the determination to test an employee based on reasonable cause. In order to address concerns expressed in the comments, the FAA has included a provision in this section that allows a small aviation employer to test an employee based on a determination of reasonable cause made by only one supervisor trained in detection of drug use symptoms. As proposed in the NPRM, an employer may test an employee performing a sensitive safety- or security-related function for any Schedule I or Schedule II drug, if the employer conducts the testing based on reasonable cause in a manner consistent with the employer's approved anti-drug program and the DOT procedures (49 CFR Part 40).

In response to comments specifically solicited in the NPRM, the FAA has included a provision for unannounced testing after an employee's return to duty. Employees who failed a drug test or who refused to submit to a drug test and who have not received a recommendation to return to duty from an MRO must be tested in accordance with the return-to-duty provision of the final rule. This section requires an employer to implement a reasonable program of unannounced testing, for not longer than 60 months, after an individual has been hired or an employee has returned to duty to perform a sensitive safety- or security-related function.

The FAA has expanded the role of the medical review officer (MRO). For example, the MRO will review rehabilitation programs to determine if an employee may return to duty or an individual may be hired to perform a sensitive safety- or security-related function for an employer. The MRO also is the final arbiter in the case of disputes regarding a schedule for unannounced testing after an employee's return to duty. The FAA has added several provisions to this section to describe the duties of an MRO and the involvement of the Federal Air Surgeon where an individual who holds a medical certificate tests positive for the presence of a drug or drug metabolite.

The FAA has added a provision that protects the confidentiality of employee drug testing results and any rehabilitation information. This information may be released by an employer only with the written consent of the employee. However, the FAA may examine test result and rehabilitation records and the information may be released to the NTSB as part of an accident investigation or to the FAA upon request.

For various reasons discussed previously and in response to many comments, the FAA determined that opportunities for rehabilitation and job security for employees will not be mandated by this final rule. Rehabilitation opportunities and job security issues may be considered by an employer and should be determined by employers and employees in the specific employment context.

The FAA has tailored the schedule proposed in the NPRM for submitting an anti-drug program to the FAA and implementation of an anti-drug program in response to comments received in response to the NPRM. These changes have been fully discussed previously. In essence, the large aviation companies are required to comply with the schedules proposed in the NPRM. Smaller aviation companies have additional time to develop and implement an interim anti-drug program and slightly broader timeframes to develop and submit a random testing program. The smallest aviation entities covered by the rule initially have additional time to develop and implement testing programs for their employees.

The FAA also has included a section in Appendix I to Part 121 to provide for the preemptive effect of these regulations regarding any State or local law covering the subject matter of drug testing of commercial aviation employees. However, issuance of the final rule does not preempt State criminal laws that impose sanctions for reckless conduct leading to death, injury, or property damage.

Comments on the Cost of the Anti-Drug Program

Most small entities object to the anti-drug program based on the financial and administrative burden that these entities believe would result from implementation of the rule as proposed. Executive Air Fleet (EAF) is a Part 135 certificate holder With 200 employees who would be covered by the proposed rules. Because drug testing is widespread in other industries, EAF states that the aviation industry should "move ahead" with the proposed rules. However, EAF states that the potential costs of an anti-drug program could be burdensome even to an operation the size of EAF. EAF estimates that drug testing as proposed in the NPRM would cost $25,000 annually to test its 200 covered employees. EAP services would cost up to $26.00 per employee. EAF believes that EAP services would have to be available to the total employee population, not only sensitive safety- or security-related employees, because it is a benefit offered to employees. Thus, EAF estimates that EAP services for a business employing 400 individuals would cost $10,400 annually.

Metro Air is a Part 135 certificate holder using two single-engine aircraft, two light twin-engine aircraft, and three helicopters. Metro Air also is a flight school operator using 15 aircraft. Metro Air employs six full-time pilots and four to five part-time pilots. Metro Air states that the proposed rule is not financially feasible for small commercial operators because the company is not in a position to retain or offer rehabilitation to an employee who tests positive for drugs and the cost of hiring an MRO to interpret test results would be prohibitive. Metro Air believes that the FAA should conduct all drug testing of employees and administer any rehabilitation offered to an employee

Ryder Systems, Inc. employs over 40,000 individuals who perform a variety of jobs in the transportation industry. Ryder Systems implemented an EAP in 1984. Ryder Systems estimates that 40 percent of the employees enrolled in the EAP due to controlled substance abuse problems require 28- to 30-day inpatient treatment that costs between $10,000 to $20,000. The average cost for controlled substance rehabilitation per employee is $3,000. On this basis, Ryder Systems believes that the FAA should only require that an employer establish an EAP and offer EAP services to an employee but should not specify the details of an EAP or rehabilitation program. However, Ryder Systems believes that the FAA should preserve the employer's discretion to determine EAP eligibility standards for employees, treatment of repeat offenders, and the conditions for allowing an employee to return to work.

American Airlines estimates that rehabilitation and treatment of an employee costs $8,000. For this reason and to ensure that the quality of treatment will lead to a reasonable prognosis for recovery, American Airlines believes that employers and contractors should be financially responsible for rehabilitation. Conversely, RAA and several small aviation entities, including Martin Aviation, Inc., believe that the FAA should not force airlines to incur the cost of employee rehabilitation due to the economic impact of the requirement on the regional airline industry.

RAA states that the average cost of a single random test would be $55 and that retesting for verification of positive results could cost up to $80 per test. On this basis, RAA estimates that the cost of random testing at a rate of 125 percent annually for regional airline pilots only will approach $500,000 annually. Due to the high cost of testing at a rate of 125 percent and the fact that the proposed rules would require testing of other aviation safety-related personnel in addition to pilots, RAA suggests that a random sampling rate of 50 percent would be appropriate.

Suburban Airlines employs 211 employees who would be covered by the proposed program. Suburban estimates that the FAA's program would cost over $28,000 annually at present employment levels. Based on Suburban's experience, 5 percent of initial tests indicate positive results for the presence of drugs and must be confirmed to verify the initial test results. Tramco, Inc., a certificated repair station, estimates that compliance with the anti-drug program will cost $24,000 annually plus counseling and lost time costs.

ALPA believes that the FAA incorrectly estimated the cost of the proposed anti-drug program and, therefore, the drug testing program is not justified by any reasonable cost-benefit analysis. ALPA states that the laboratory cost per test, assuming a random testing rate of 125 percent and a negotiated cost similar to the cost contained in the economic analysis, is merely a fraction of the total costs associated with a drug testing program. ALPA maintains that a drug testing program could cost at least $280 million per year. ALPA's estimate of cost is based on substantial administrative and personnel expenses, transportation of employees to a collection site, employee compensation during collection of a specimen, and compensation of employees who replace employees being tested during revenue flights.

A commenter speaking as national litigation counsel for AOPA and on behalf of the California Aviation Council and the Orange County Aviation Association believes that the FAA understated the costs and overgeneralized the benefits of the proposed rule contained in the economic summary of the NPRM. This commenter also believes that the FAA failed to consider more effective, practical, and less intrusive programs to deal with any drug problem that might exist in the aviation industry. The commenter states that the economic analysis fails to consider the potentially destructive economic effect of the proposed rules on small, commercial operators. Therefore, the commenter states that the FAA may not issue a final rule because the FAA has failed to meet the criteria of Executive Order 12291.

California Aeromedical Rescue and Evacuation, Inc. (CARE) does not believe that the proposed rules are reasonable due to the lack of evidence of a drug problem in aviation. CARE comments that the cost of maintaining a drug testing program, whether or not that program includes random testing, is significant. CARE employs 10 pilots, 4 mechanics, and approximately 45 flight nurses and flight medics. CARE estimates that the cost per test is $45 and, therefore, the fiscal impact on its operations will be between $8,000 to $12,000 per year. CARE believes that its scarce financial resources should be used for training, equipment, and maintenance. CARE states that preemployment and probable cause testing are wise and prudent measures. CARE predicts that including other types of testing will cause some of its employees to leave the company due to issues related to the constitutionality of unannounced testing without particularized suspicion of drug use. CARE states that the costs of litigation and training for new employees should be directed to other more useful avenues.

The commenters stress that while the costs developed by the FAA may be appropriate for larger companies, who are able to take advantage of "economies of scale," small aviation companies would incur significantly higher costs.

Two commenters who submitted a joint comment on the economic analysis contained in the NPRM dispute the benefits of the proposals in the NPRM, particularly with the FAA's estimate of the possible detection rate. These commenters present statistical analyses, using the data in the NPRM on general aviation pilots, to demonstrate, in their opinion, a considerably reduced detection rate and, therefore, considerably reduced benefits.

FAA Response. The FAA agrees that costs of screening and confirmation tests may reflect the bulk purchasing power of laboratory service for a large number of specimens and, therefore, may be applicable only to large aviation companies. However, the FAA lacks clear and definitive data regarding the extent to which "economies of scale" will affect or reduce costs. Although some commenters believe that the FAA failed to consider costs associated with administration of the anti-drug program, the initial Regulatory Evaluation and the FAA's total costs stated in the NPRM included these administrative costs.

The figures in the NPRM were based on average industry costs available to the FAA at the time of the NPRM. The FAA believes that the costs contained in the NPRM may closely equate to actual costs because the vast majority of personnel subject to the testing requirements of the proposed rule, by a ratio of 10 employees of large companies to one employee of small companies, are employees of large companies. Moreover, the FAA notes that small Part 135 certificate holders and other small aviation companies often are associated with larger companies. The FAA believes that small aviation operators could participate with large companies, much as these small companies contract for maintenance, reservations services, gate agents of larger companies, to conduct the required tests pursuant to the rules and, thus, take advantage of the economies of scale.

Nevertheless, the FAA increased the estimate of drug testing costs in an effort to respond to the concerns expressed by the commenters and to reflect the potential testing costs incurred by small aviation operators. For the purposes of the Regulatory Impact Analysis of the final rule, the cost estimate of screening tests was increased to $25.00 per test; the cost estimate of confirmation tests was increased to $35.00 per test; and the administrative costs were increased to $35.00 per test.

The FAA recognizes that broad rehabilitation programs would be very costly and could be cost-prohibitive for small aviation companies. For a variety of reasons discussed previously, the final rule does not require an employer to offer an opportunity for rehabilitation to employees and the FAA has not mandated a minimum amount of time that an employer must hold a position open while an employee is prohibited from performing sensitive safety- or security-related functions.

In estimating the benefits that are expected to accrue as a result of a comprehensive anti-drug program, the FAA noted its lack of specific, available data in the NPRM. The FAA disagrees with the commenters who dispute the analysis of benefits provided by the FAA in the NPRM and notes that a comparison of the benefits determined by these commenters with the estimated costs of the rule would still result in a cost beneficial rule. No evidence is available to demonstrate that sole reliance on the data regarding deceased general aviation pilots is representative of the population of employees who are subject to testing under the provisions of the final rule.

Infrequent and sporadic data is available in the commercial aviation sector. The FAA can not rely solely on information deduced from the two commercial aviation accidents discussed previously. The information does not reveal any significant patterns that would assist the FAA's estimates of costs and benefits of the proposals and, in any event, this information is not generally representative of personnel who are not pilots but who are subject to the requirements of the rule. For these reasons, the FAA believes that it is appropriate to use the national NIDA study information to estimate the potential costs of the rule because it more accurately reflects the broad population of employees who would be tested pursuant to a comprehensive drug testing program.

Economic Summary

In accordance with the requirements of Executive Order 12291, the FAA reviewed the cost impact and benefits of this final rule. Cost factors were obtained from information in the public docket including comments received during the FAA's public hearings. Additional data were furnished by air carrier trade associations, public institutions, and major chemical and drug testing laboratories. This rulemaking does not meet the criteria of a "major" rule under Executive Order 12291 because it is not likely to have an annual effect on the economy of $100 million or more. A summary of the FAA's estimates of the costs and benefits is provided below. However, because the rulemaking is a costly undertaking, the FAA considers the final rule to be a "major" rule under Executive Order 12291. For this reason, the FAA prepared, and placed in the docket, a Regulatory Impact Analysis of the final rule. In addition, because the rule involves issues of substantial interest to the public, the FAA determined that the rulemaking is significant under the Regulatory Policies and Procedures of the Department of Transportation (44 FR 11034; February 2, 1979).

Costs. The FAA estimated that the requirements of the final rule, over the 10-year period from 1990 to 1999, will cost approximately $240.3 million in 1987 dollars (an average of $24.0 million per year) or approximately $135.2 million discounted over that 10-year period. The discounted cost includes (rounded to the nearest million) $97.1 million for random testing; $6.2 million for periodic testing, postaccident testing, testing based on reasonable cause, and return-to-duty testing; $8.6 million for preemployment testing; $10.6 million for blind samples submitted to laboratories; $10.3 million for EAP education and training costs; and $2.4 million for costs associated with preparation and submission of an employer's anti-drug program.

Costs of postaccident testing, testing based on reasonable cause, and return-to-duty testing are included as part of periodic testing costs. The FAA used one-half of one percent of the estimated population tested annually as the number that will be tested under one of these three circumstances. The analysis of these costs is set forth in the full Regulatory Impact Analysis (Exhibit A) included in the public docket.

The final rule will affect 149 entities that hold Part 121 certificates, 3,614 entities that hold Part 135 certificates providing scheduled and on-demand service, and contractors who provide services to those certificate holders. The rule also will affect an undetermined number of entities engaged in operations listed in § 135.1(b) for compensation or hire. The FAA has been unable to determine the exact number of these organizations due to the highly diversified and multipurpose nature of their operations. For purposes of analyzing the cost impact of the final rule on these entities, the FAA estimated that approximately 1,500 entities, the same number as repair stations, are engaged in operations listed in § 135.1(b) for compensation or hire. Based on these estimates, the FAA estimated that 538,000 persons will be subject to drug testing in 1991 pursuant to the requirements of the final rule.

The FAA estimated that the cost of an initial screening test for the presence of drugs or drug metabolites will be $25 per test. The FAA expects that 12.5 percent of initial screening tests will require confirmation testing in accordance with the guidelines and standards contained in Appendix I to Part 121. Of the total initial screening tests, 7.5 percent are expected to be confirmed as true positives; 5.0 percent are expected to result in false positive test results after confirmation. The remainder are not expected to be confirmed as positive either because the specimen failed to meet the minimum threshold to be scientifically considered as positive, or because the specimen did not show the presence of drugs or drug metabolites. Confirmation tests are estimated to cost $35 per test. The FAA notes that an employer can realize substantial savings by contracting with a drug testing laboratory for a fixed price that includes the cost of initial screening tests and confirmation tests rather than paying for these tests separately. For example, the Coast Guard currently pays a single, fixed price of $21 for screening tests and any resulting confirmation tests under a single contract with a drug testing laboratory.

The FAA estimated that a screening test will require 15 minutes of a person's time to provide information for chain-of-custody forms and to provide a urine sample for drug testing. Thus, the FAA included a factor equal to 25 percent of an average, fully allocated, hourly wage for each occupational group covered by the final rule. The FAA also assumed that affected persons will provide urine samples for testing while on duty. The FAA included $35 per test as an administrative cost to cover, among other things, collection of specimens, reporting and recordkeeping, and chain-of-custody procedure costs. The FAA recognizes that these costs can vary significantly depending on a number of variables. For example, specimens may be collected in a medical setting (i.e., in a hospital or a clinic, in the presence of medical doctors, nurses, medical technicians). Collection of specimens in a medical setting is not required by this rule. Less expensive settings and nonmedical personnel trained for specimen collection may be used by the aviation industry. Collection sites may be either centrally located or dispersed throughout remote geographical locations. DOT's drug testing program and the FAA's periodic drug testing program illustrate the cost variations associated with specimen collection. DOT uses a contractor to collect specimens at various, dispersed locations throughout the country. DOT pays an average of $123 for each specimen collected. Specimens collected as part of the FAA periodic testing program are collected by aviation medical examiners. Collection costs for periodic tests range from $10 to $45 per specimen. The FAA considered these costs when estimating the administrative costs of the final rule. After consideration of the cost variations, the estimated administrative costs are representative of the costs expected in the aviation industry. The FAA increased the administrative costs contained in the NPRM on the basis of information submitted by commenters. The FAA believes that the aviation industry will find the most economical method of sample collection and will do so at costs that most closely mirror the costs charged to the FAA by aviation medical examiners for collection of specimens for periodic testing.

In the case of most postaccident testing, testing based on reasonable cause, and testing after return to duty triggered by refusal to submit to a test or failure of a previous drug test, the FAA assumed that collection costs for these tests are the same as the collection costs for random tests. However, the FAA assumed that the cost associated with collection of a small percentage of postaccident specimens would be $100 per test. The FAA used this higher figure to address the probability that postaccident specimens may be collected at a remote accident site or a location other than a site that the employer routinely collects specimens. Conversely, specimens collected for testing based on reasonable cause or testing after return to duty could be collected in a central location or at the same location where other specimens are collected pursuant to the requirements of the final rule.

Benefits. The FAA believes that three major benefits will result from the promulgation of the final rule. First, benefits will accrue from the prevention of potential injuries or fatalities and property losses due to accidents attributed to neglect or error on the part of employees performing sensitive safety- or security-related functions whose motor skills or judgment may be impaired by drugs. Second, benefits will accrue based on the potential reduction in employee absences from work, lost productivity, reduced medical and insurance costs due to on-the-job accidents, and improved general safety in the workplace. Third, broad benefits in the development of air commerce will accrue from projected diminished drug use by commercial aviation employees, thereby increasing public confidence in the commercial aviation transportation industry.

A review of the commercial aviation safety record shows that drug use may have been a cause or factor in only two recent aviation accidents. One accident was in 1983 and involved an all-cargo operation. The second accident was in 1988 and involved a passenger operation. Both accidents have been described previously in this rulemaking document. Drug use has not been established as a definitive causal factor of either accident. In the absence of readily-available statistical data depicting the extent of drug use by employees in commercial aviation and in light of the pernicious effects of drug use, the FAA does not consider the existing safety record to be an exclusive and valid indicator of the threat to aviation safety posed by aviation employee drug use. However, allegations of drug use by the pilot and copilot of Continental Air Express Flight 2286 that crashed on January 19, 1988, killing 9 people, reveal the significant and real potential for fatal aircraft accidents that may be related to the use of drugs in commercial aviation. In light of data regarding drug use by mechanics and repairmen submitted in response to the ANPRM, the FAA also is concerned about the potential for aviation accidents attributable to drug use by commercial aviation maintenance personnel.

The FAA estimates that $84.3 million in discounted benefits would result from promulgation of the final rule if one accident attributed to drug-impaired performance by an individual who performs a sensitive safety- or security-related function in commercial aviation, involving a narrow-body, three-engine, commercial aircraft carrying 133 passengers and 5 crewmembers, is prevented during the 10-year period from 1990 to 1999 (Exhibit E). Although not claimed as a benefit in this Regulatory Impact Analysis, the benefits associated with the prevention of a single accident, during the 10-year period from 1990 to 1999, would be considerably more if the accident involved a 4-engine, wide-body aircraft carrying 289 passengers and 19 crewmembers. In this event, discounted benefits would total $219.9 million.

The FAA also attempted to estimate benefits of the final rule, other than those benefits that may result from the prevention of aircraft accidents, associated with diminished drug use by commercial aviation personnel or any drug-deterrent effect that would result from promulgation of the final rule.

These estimated benefits consist of improved employee productivity as a result of drug use deterrence. A report released in 1987 by the National Institute on Drug Abuse (NIDA), entitled "Strategic Planning for Workplace Drug Abuse Programs," reveals that drug and alcohol abusers are involved in an additional 3.6 more accidents than nonabusers; file 1.5 additional workers' compensation claims than nonabusers; file 2.5 times more often for sick leave of 8 or more consecutive days than nonabusers; and incur 3 times the amount of normal medical costs than nonabusers.

In the absence of pertinent data, the FAA assumed that the rate of drug use by the 538,000 covered aviation personnel is approximately the same as the rate of drug use in the general population (e.g., 10 percent). The FAA also assumed that the productivity of employees who use drugs is 95 percent of the productivity of employees who do not use drugs.

In order to be conservative in estimating the costs of the final rule, the FAA assumed that 7.5 percent of the covered aviation personnel would produce test results that are confirmed positive for prohibited drug use. However, this estimate is premised on testing that produces optimum detection rates and the fact that drug users may continue to use drugs despite implementation of a comprehensive drug testing program that includes unannounced testing based on random selection. Realistically, the FAA expects that testing pursuant to the final rule will not achieve optimum detection rates and that some drug users will cease to use drugs rather than face the consequences of being detected by testing under the final rule.

The FAA hypothesized that 1.0 percent of the affected aviation population will stop using drugs voluntarily in the face of a comprehensive drug testing program. These individuals are expected to continue to perform sensitive safety- or security-related functions without the presence of drugs or drug metabolites in their systems. As noted above, the FAA assumed that drug users are 95 percent effective at their jobs compared to employees who do not use drugs. Thus, the aviation industry would realize a 5 percent on-the-job productivity increase for each individual who ceases to use drugs. Therefore, the FAA estimated that employee productivity gains of $97.3 million, or $54.3 million discounted over the 10-year period from 1990 to 1999, will accrue to the aviation industry based on the reduction of illegal drug use and increased employee productivity (see Exhibit G).

Benefit/Cost Comparison. The total cost of compliance with the requirements of the final rule is estimated to be $240.3 million in 1987 dollars and $135.2 million, at a present worth discount rate of 10 percent, over the projected 10-year period from 1990 to 1999. The FAA has been unable to quantitatively estimate the accident prevention effectiveness of the final rule. Nevertheless, the FAA believes that drug use, unless stemmed, will continue to pose a threat to aviation safety. The FAA estimates that preventing one accident involving an average size, commercial, passenger aircraft during the 10-year period from 1990 to 1999 would result in discounted benefits of $84.3 million. Likewise, discounted benefits ensuing from increased employee productivity are estimated to be $54.3 million. Thus, total discounted benefits expected to result from promulgation of the final rule amount to $138.6 million. The benefit to cost ratio of the final rule is 1.03.

Regulatory Flexibility Determination

The Regulatory Flexibility Act of 1980 requires a Federal agency to review any final rule to assess its impact on small businesses. In consideration of the cost information discussed previously and included in the full Regulatory Impact Analysis, the FAA certifies that the final rule may have a significant negative economic impact on a substantial number of small entities. In an effort to relieve the burden on small entities, the FAA modified the requirements of the final rule and provided alternative schedules and implementation periods directed solely at small aviation entities to provide some measure of relief from the costs associated with the rule. The FAA anticipates that these modifications will reduce burdens associated with the requirements of the final rule on small entities without adversely affecting aviation safety.

International Trade Impact Statement

The final rule will affect only domestic operators and, therefore, will have no impact on trade opportunities for U.S. firms doing business overseas or on foreign firms doing business in the United States. It should be noted that, unless compliance with this final rule would violate the domestic laws of policies of a foreign country or a foreign government contends that application of the rule raises questions of compatibility with foreign laws or policies, individuals employed at foreign repair stations under contract to U.S. certificate holders would not be able to perform maintenance or preventive maintenance work on U.S.-registered aircraft unless they participate in an anti-drug program. Thus, foreign repair stations may be effected economically. Likewise, this program also will result in an expense to U.S. certificate holders operating overseas because these entities will be required to establish anti-drug programs, which will not be required of their foreign competitors. The FAA is unable to estimate the possible competitive effect of these costs.

Paperwork Reduction Act Approval

In order to ensure compliance and effectiveness of the final rule, the FAA included necessary reporting and recordkeeping requirements in the provisions of the final rule. The final rule requires employers to maintain records related to employee drug testing and any rehabilitation and to submit periodic, written reports to the FAA that summarize an employer's anti-drug program. In accordance with the Paperwork Reduction Act of 1980, the recordkeeping and reporting requirements of the final rule have been submitted to the Office of Management and Budget (OMB) for approval.

Federalism Implications

The final rule adopted herein will not have substantial direct effects on the States, on the relationship between the national government and the States, or on the distribution of power and responsibilities among the various levels of government. This rule preempts any State or local law that would prohibit or limit drug testing required under the rule. This preemption, under the FAA's statutory authority, is essential to ensure that the safety benefits are obtained throughout the nation's air transportation system. The rule also could have an indirect, economic impact on State and local governments, if persons who lose jobs as a result of a positive drug test require welfare benefits or other public social services. The FAA does not expect this impact to be significant, however. Therefore, in accordance with Executive

Order 12612, the FAA determines that this final rule does not have sufficient federalism implications to warrant preparation of a Federalism Assessment.

CONCLUSION

The final rule requires domestic and supplemental air carriers, commercial operators of large aircraft, air taxi and commuter operators, certain commercial operators, certain contractors to these operators, located in the United States or in a foreign country, and air traffic control facilities not operated by the FAA or the U.S. military to have an anti-drug program for employees who perform, either in the United States or in a foreign country, sensitive safety- or security-related functions. Testing under this final rule will be conducted by an employer prior to employment, periodically, randomly, after an accident, based on reasonable cause, and after an employee returns to duty to perform a sensitive safety- or security-related function for an employer. The final rule also will require that an employer provide EAP education and training services to employees and supervisors. The rule is necessary to prohibit an employee from performing a sensitive safety- or security-related function for an employer while that employee has a prohibited drug in his or her system or if that employee has used drugs as evidenced by a drug test showing the presence of drugs or drug metabolites. The rule is intended to ensure a drug-free aviation workforce and to eliminate drug use and abuse in commercial aviation. The FAA believes that the final rule will reduce the potential for drug-related aviation accidents and will foster identification of commercial aviation employees who use drugs.

Pursuant to the terms of the Regulatory Flexibility Act of 1980, the FAA certifies that the final rule may have a significant negative economic impact on a substantial number of small entities. The final rule will not result in an annual effect on the economy of $100 million or more, but because the requirements of the final rule are important and costly undertakings, the FAA considers the final rule to be a major rule pursuant to the criteria of Executive Order 12291. In addition, the rule involves issues of substantial interest to the public; thus, the FAA determines that the final rule is significant under the Regulatory Policies and Procedures of the Department of Transportation (44 FR 11034; February 2, 1979).

THE RULE

Accordingly, the FAA amends Parts 61, 63, 65, 121, and 135 of the Federal Aviation Regulations (14 CFR Parts 61, 63, 65, 121, and 135) effective December 21, 1988.

The authority citation for Part 135 continues to read as follows:

Authority: 49 U.S.C. 1354(a), 1355, 1421-1431, and 1502; 49 U.S.C. 106(g) (Revised, Pub. L. 97-449, January 12, 1983).

Amendment 135-29

Foreign Repair Station Rules

Adopted: November 16, 1988 **Effective: December 22, 1988**

(Published in 53 FR 47362, November 22, 1988)

SUMMARY: The purpose of these amendments is to revise the regulations to accommodate the increasing demand for maintenance and alteration of U.S.-registered aircraft operated worldwide. These amendments modify the requirements for U.S. certification of a foreign repair station. In addition, a foreign or domestic manufacturer of a product for which it holds a U.S. type certificate and that is certificated by the FAA as a repair station will be allowed to return to service a component maintained or altered by a noncertificated source, subject to specified conditions. Lastly, to be consistent with the air carrier operating rules, the air taxi/commercial operator rules are amended to permit the airworthiness release to be signed by a person authorized by a U.S.-certificated foreign repair station. This action is part of a general project underway to review and update all Federal Aviation Regulations (FAR) governing repair stations.

FOR FURTHER INFORMATION CONTACT: Mr. Leo Weston, Aircraft Maintenance Division (AFS-340), Office of Flight Standards, Federal Aviation Administration, 800 Independence Avenue, SW., Washington, DC 20591, telephone (202) 267-8203.

SUPPLEMENTARY INFORMATION:

Background

Subpart C, Part 145 of the FAR, Foreign Repair Stations, has its origin in Civil Air Regulations (CAR) Part 52 by an amendment adopted in 1949 as § 52.38 (14 FR 623; February 11, 1949). The purpose of the amendment was to provide for the issuance of foreign repair station certificates for facilities located outside the United States where the Administrator found that ". . . such agencies are needed for the maintenance, alteration, and repair of United States aircraft operated outside the United States."

The lack of repair agencies authorized to perform work on U.S.-registered aircraft in certain areas outside the United States at that time resulted in considerable inconvenience to aircraft owners, pilots, and operators conducting international flight operations. It was recognized that certification of foreign agencies, even those not staffed with holders of U.S. airman certificates, would expedite the maintenance, repair, and return to service of U.S. aircraft in those areas where certificated repair stations were not available. Consistent with the concept that the maintenance was to be performed on U.S.-registered aircraft in areas outside the United States, the scope of a certificated foreign repair station's authority provided for in § 52.38 was limited to "performance of work on aircraft which are used in operations conducted in whole or in part outside the United States. . . ."

CAR Part 52 was revised in 1952 (17 FR 2981; April 5, 1952) with § 52.38 becoming § 52.50. When the Civil Air Regulations were recodified in 1962, CAR Part 52 became FAR Part 145, and CAR § 52.50 became FAR §§ 145.71 and 145.73 (27 FR 6662; July 13, 1962).

On July 1, 1986, the FAA prepared two draft internal action notices which were later revised on October 3, 1986. The first addressed foreign repair station privileges and responsibilities under Part 145 and the eligibility of replacement parts for return to service on U.S.-registered aircraft. The second draft action notice addressed air carrier privileges and responsibilities under Parts 121 and 135 when using noncertificated sources for parts. The draft action notices did not represent new FAA policy.

Although it is not regular or required practice for the FAA to solicit comments on internal guidance material, such as action notices, the original notices were broadly circulated to be consistent with the FAA's practice of seeking constructive input and promoting international cooperation. The FAA received comments from 34 different entities, including several foreign civil aviation authorities. Several of the commenters were of the opinion that existing rules and practices required substantive change, and that, to be in accordance with the Administrative Procedure Act, a rulemaking proceeding was appropriate.

In addition, the FAA received petitions from the Air Transport Association of America (ATA) (Docket No. 25169) and the Regional Airline Association (RAA) (Docket Nos. 25162 and 25163). These petitions request changes to the FAR to clarify the rules and expand the availability of foreign repair stations and foreign aircraft manufacturers for the maintenance and alteration of U.S.-registered aircraft and components, whether or not such aircraft are used wholly or partly outside the United States. Related parts of these petitions have been considered in the preparation of this rule and are considered a part hereof. Issues in the petitions not within the scope of the Notice will be acted upon separately.

The civil aviation environment has changed significantly since the foreign repair station regulations were first adopted in 1949. More foreign-manufactured aircraft are being flown by U.S. operators, and the need for increased maintenance capability for U.S.-registered aircraft from both foreign manufacturers and U.S.-certificated foreign repair stations has dramatically increased in the past 39 years. This need is reflected by exemptions that have been granted in recent years related to maintenance and alterations performed by foreign repair stations. Exemptions to §§ 145.71 and 145.73 have authorized certain U.S.-certificated foreign repair stations to perform work on foreign-manufactured products to be used on U.S.-registered aircraft that may not be operated outside the United States. Over 100 exemptions from the operating rules have also been issued to air carriers to permit them to use other than U.S.-certificated airmen (i.e., to use foreign manufacturers and foreign U.S.-certificated repair stations) to repair and return to service U.S.-registered aircraft and components under the provisions of the air carrier operating rules.

Many U.S. air carriers currently use foreign-manufactured aircraft and other aeronautical products. This use is partly a result of multinational consortiums and cooperative agreements to manufacture and market domestic and foreign products between U.S. and foreign manufacturers. In recent years, the type and number of aircraft and aircraft parts manufactured in foreign countries and used by U.S. operators in the United States have increased rapidly.

Many U.S. air carriers use foreign-manufactured aircraft and products as the prime elements of their fleets. United States commuter airlines are heavily dependent upon foreign-manufactured aircraft. Due to the unavailability of modern U.S.-manufactured passenger aircraft in the 20-50 seat range, almost all of the aircraft with passenger capacities exceeding 19 seats used by U.S. commuter airlines are foreign manufactured. Larger foreign-manufactured aircraft, such as the Airbus, as well as foreign-manufactured engines, are being used increasingly by U.S. air carriers.

In addition, many U.S. aircraft manufacturers rely on foreign subcontractors for many component parts of their aircraft. Under current regulatory limitations, however, foreign manufacturers (with or without a U.S. foreign repair station certificate) have been unable in many situations to repair their products, even to the extent that warranty work has been curtailed.

United States operators have expressed a need for expanded access to U.S.-certificated foreign repair stations for maintenance, alteration, and preventive maintenance of their aircraft, aircraft engines, propellers, appliances, and component parts because of the increased worldwide demand for maintenance and the increasing amount of foreign-manufactured equipment being used by U.S. operators. This expanded access can be accomplished by changes to Subpart C, Part 145, that would modify the restrictions on who may apply for U.S. certification as a foreign repair station and the limitations on work that such a repair station can perform.

Accordingly, on November 24, 1987, the FAA issued Notice of Proposed Rulemaking (NPRM) No. 87-12 (52 FR 45124; November 24, 1987). The Notice proposed to amend Part 145 for certificating foreign repair stations by modifying the requirements for determination of need before a foreign repair station may be considered for U.S. certification. The Notice also proposed modifying the limitation on the scope of work that a foreign repair station may perform on U.S.-registered aircraft and on aircraft engines, propellers, appliances, and component parts for use on U.S.-registered aircraft. Subject to specified conditions, the Notice provided that a repair station that is also a U.S. type certificate holder may use a noncertificated facility for maintenance. The Notice also proposed amending Part 135 to permit the airworthiness release to be signed by a person authorized by a U.S.-certificated foreign repair station. Comments on the Notice were requested from the public to be received on or before January 25, 1988.

Subsequent to the opening of the docket on this Notice, on December 21, 1987, Congress, in Amendment No. 45 to the Conference Report on the Continuing Resolution H. J. Res. 395 making continuing appropriations for the fiscal year 1988, stated that the proposed rulemaking on foreign repair stations raised significant policy, economic, and safety issues that should be carefully reviewed by the appropriate authorizing committees, and that the FAA should defer final action on the notice of proposed rulemaking until October 1, 1988. (133 Cong. Rec. H12799 daily ed. Dec. 21, 1987).

The FAA received 3,894 comments on this Notice. These comments have been reviewed and considered by the FAA in the promulgation of this rule. Of the 3,894 comments reviewed, 3,808 oppose NPRM No. 87-12 and 79 commenters are in support. No comments specifically oppose the proposed amendment to Part 135 to permit the airworthiness release to be signed by a person authorized by a U.S.-certificated foreign repair station, and this amendment is adopted herein as proposed. Seven commenters did not express a position on the Notice.

Of the 3,894 comments received and reviewed by FAA, 1,116 comments regarding foreign repair stations were received by the FAA prior to the issuance of the Notice in the *Federal Register* on November 24, 1987. The 1,116 pre-docket comments have been reviewed and generally oppose the substance of the Notice and parallel the comments received in opposition to the Notice after the docket opened.

A considerable number of comments on the Notice were received after the docket was closed. As of May 16, 1988, all of these late comments were reviewed to ensure that all of the issues raised by those comments have been addressed in this rulemaking.

Of the comments opposing the Notice, most of the commenters are either individual mechanics employed, or persons who have family members employed, by a domestic repair station or airline. The labor unions representing mechanics, the Air Line Pilots Association (ALPA) and the Association of Flight Attendants (AFA), unanimously oppose the proposal. Other union groups and organizations, such as the American National Association of Letter Carriers, the Moving Picture Machine Operators, the United Food and Commercial Workers, and the Aeronautical Repair Station Association (ARSA) also oppose the Notice. American Airlines opposes the proposal as it applies to all foreign repair stations, but supports expanding the scope of the present regulations to permit foreign manufacturers to support their own products.

The Office of the Secretary of State for the State of Oklahoma forwarded a Resolution, adopted by the House of Representatives of the Second Session of the 41st Oklahoma Legislature, requesting the FAA to withdraw the proposed rule. By House Resolution No. 139, on February 24, 1988, the House of Representatives of the Eighty-fourth General Assembly, Second Regular Session, of the State of Missouri resolved that the Missouri House of Representatives encourage each member of the Missouri Congressional Delegation to contact the United States Department of Transportation and any other appropriate Federal Agency regarding the potential impact on Missouri's economy with any expansion of maintenance authority granted under Part 145 and that the Chief Clerk of the Missouri House of Representatives be instructed to prepare properly transcribed copies of the resolution for the Governor of Missouri, the Missouri Department of Economic Development and for each member of the Missouri Congressional Delegation for their information and possible action. The Attorney General for the State of Minnesota urged the withdrawal of the proposed relaxation of the FAA's rules regarding the use of foreign repair stations.

Of the 79 comments received by FAA on NPRM No. 87-12 supporting the proposals contained therein, the majority of the comments are from corporate or foreign government entities. Seven foreign civil aviation authorities support the Notice, as do several foreign airlines, foreign manufacturers, and foreign repair stations, as well as their representative associations. Several U.S. airlines support the Notice, as do their associations. Several U.S. manufacturers and associations support the proposal, including Pratt & Whitney, General Electric, Fokker Aircraft of USA, Incorporated, MBB of America, Inc., Aerospace Industries Association (AIA), and General Aviation Manufacturers Association (GAMA).

Discussion of Comments

The comments on this Notice received by the FAA address 15 separate issues. These are discussed below.

Use of a Noncertificated Facility Subject to Specified Conditions

A number of commenters express concern and some misunderstanding with the proposed amendment to § 145.47 by adding a new paragraph (§ 145.47(c)). The new paragraph would permit a domestic or foreign manufacturer holding a U.S. type certificate and a U.S. repair station certificate to have maintenance and alteration work performed on certain components by a noncertificated source under certain specified conditions.

In proposing the change to § 145.47, it was the FAA's intent to permit a type certificate holder holding the U.S. type certificate for a product it manufactures or manufactured to contract for maintenance and alterations of a component of that product with a noncertificated original component manufacturer (or licensee), provided such type certificate holder is also a U.S.-certificated repair station. This change would permit the original component manufacturer (or licensee) to perform maintenance on or alteration of a component of the original type certificated product it manufactures for the type certificate holder.

The type certificated product (i.e., aircraft, aircraft engine, propeller, or appliance) has been determined by the FAA to be of proper design, material, specification, construction, and performance for safe operations, and to have met minimum FAA standards, rules, and regulations. Permitting the type certificate holder, that is also a U.S.-certificated repair station, to maintain the component or to contract for its maintenance or alteration, will permit that foreign or domestic type certificate holder to support its product (including warranty work), regardless of where the component was manufactured. To use a noncertificated facility for maintenance, a type certificate holder must not only hold the type certificate for the product, including components thereof, but must also be a functioning U.S.-certificated repair station. Under all circumstances, the type certificate holder's repair station must be under its control. Further, the noncertificated subcontractor must have produced the original component under the type certificate.

Before a noncertificated source (original component manufacturer or licensee) may be used by the type certificate holder to repair the component, the type certificate holder must show the FAA that the original component manufacturer or its licensee has all of the necessary data, facilities, materials, and qualified personnel to accomplish the work. In addition, the component would be returned to service by the type certificate holder in accordance with a quality control system for maintenance that (1) Recognizes the credit given to the quality control system that the manufacturer has in place for the type certificated product as well as the necessary differences between the manufacturing and maintenance processes; (2) is approved by the FAA; and (3) is included in the operations specifications and inspection procedures manual of the type certificate holder's repair station.

The type certificate holder, that is also a certificated repair station, is responsible for the airworthiness of the repaired component: (1) By ensuring that the maintenance quality control system established for the component was followed in accordance with the procedures in its repair station's inspection procedures manual; and (2) by ensuring that the maintenance or repair of the component was properly documented. This procedure for using noncertificated sources is different from that permitted under current rules (§ 145.47(b)), though under both § 145.47(b) and the new § 145.47(c) the repair station must have the system capability to determine the airworthiness of certain articles or processes. The difference between the two paragraphs is that the quality control system and procedures of the type certificate holder to control a newly manufactured component from the component manufacturer can be modified by the type certificate holder's repair station to a quality control system for maintenance. After a component is repaired by the component manufacturer, the component will go through the type certificate holder's repair station maintenance quality control system. The type certificate holder's repair station will inspect such a component in accordance with its inspection procedures manual to ensure that, before the component is placed in stock for use in an aircraft or part thereof, it is in a good state of preservation and is free from apparent defects or malfunctions.

Under the existing rules (§ 145.47(b)), a repair station, if authorized by the FAA, can only contract those functions asterisked in Appendix A to Part 145. The amendment to § 145.47(c) will permit the type certificate holder to contract for the repair of a component under its repair station certificate using the quality control system inspection as set forth in its inspection procedures manual. Under this amendment, any maintenance functions that are included in the inspection procedures manual of the type certificate holder's repair station may be accomplished under the quality control system approved for the repair station.

In proposing this concept, the FAA recognized the process established and approved for type certification and manufacture of new products, and established a parallel system to include maintenance requirements for a product and to provide an additional means for a repair station to contract out certain components to a noncertificated facility for maintenance. This process is intended to ensure that the repaired component, like the original manufactured component, is airworthy and meets all requirements for installation on the type certificated product. This process also recognizes that the original component manufacturer is a viable source for engineering data, technical expertise, and service information. In addition, the repair of the component would be accomplished under the auspices of a U.S.-certificated repair station (the type certificate holder), which has met the requirements under Part 145 for such a facility, and is inspected and approved by the FAA.

Twenty-seven commenters supporting the Notice recommend that the FAA permit a non-type certificated original component manufacturer to carry out maintenance and repair on its products as a "noncertificated source" under very broad conditions. The commenters recommend that the noncertificated component manufacturer be permitted to approve a product's return to service without quality verification by a type certificate holder and have the authority for direct shipment of parts. Commenters also recommend that the United States accept direct shipment from the component manufacturer if the manufacturer is approved and authorized to maintain the product by a national (foreign) airworthiness authority.

These recommendations are beyond the intent and purpose of rulemaking as contained in the Notice and will not be considered. However, with respect to the authority contained in the new § 145.47(c), when the FAA certificates a foreign manufacturer (that is a holder of a U.S. type certificate) as a foreign repair station, any relevant approvals given by foreign airworthiness authorities will continue to be considered. If the noncertificated component manufacturer desires to direct ship a repaired component to a user, bypassing the type certificate holder, this amendment provides for a component manufacturer to become a U.S.-certificated repair station with an appropriate rating and thus, be accorded such privileges.

Other commenters contend that by adding a new paragraph to § 145.47 as proposed, a conflict would arise with the existing § 145.47(b) in that the proposal would limit the use of outside vendors to essentially the original equipment manufacturers and their subcontractors. The commenters also point out that the proposed new paragraph to be added to § 145.47 is in conflict with § 145.1(c), which specifies that regulations regarding maintenance performed by manufacturers are covered under Part 145, Subpart D, and that §§ 145.11 through 145.79 do not apply to manufacturers. Accordingly, the commenters contend that any rules intended to apply to manufacturers should be addressed only in Subpart D, rather than in Subpart B, as proposed.

The FAA sees no conflict in § 145.47 between existing paragraph (b) and the paragraph proposed for inclusion in that section as new paragraph (c). Furthermore, a manufacturer with a limited rating under Part 145, Subpart D, cannot contract for repair of a component to a noncertificated facility and must perform its maintenance and preventive maintenance operations in accordance with Part 43. Presently, § 145.47(b) provides that a repair station, after obtaining approval from the FAA, may contract certain limited functions of repair to another facility without having, in house, the required equipment and materials for the function. Those job functions that can be so contracted to an outside agency are set forth in Appendix A to Part 145. In such an arrangement, the repair station must determine the airworthiness of the article involved before it is returned to service, unless the contractor is an appropriately rated repair station, in which case the part would be returned to service in accordance with the procedures as authorized in the repair station's inspection procedures manual. To determine the airworthiness of the article involved, the repair station must not only be appropriately rated to perform the contracted function, but must have the appropriate data, qualified personnel, and inspection capabilities to ensure the airworthiness of the article involved.

The new paragraph (§ 145.47(c)) would permit a type certificate holder that is a certificated repair station to subcontract any repair of a component of a type certificated product to the noncertificated component manufacturer. Such a type certificate holder would be responsible for the airworthiness of the article involved, as required in current § 145.47(b). However, as long as the component is returned to service in accordance with the FAA-approved quality control system of the type certificate holder's repair station, the airworthiness of the article involved is effectively ensured. This process and the scope of permitted maintenance are the basic differences between existing § 145.47(b) and new § 145.47(c).

The FAA also disagrees that the amendment to § 145.47 is in conflict with § 145.1(c). Section 145.1(c) provides that a manufacturer may obtain a repair station certificate with a limited rating issued under Subpart D of Part 145 to exercise the privileges of that rating as a "manufacturer's maintenance facility" (MMF) without having to meet the basic requirements for a repair station as set forth in Subpart B of Part 145. The amendment, however, requires the type certificate holder to obtain a rating as a repair station and to meet all of the requirements for a certificated repair station as set forth in Subpart B or C of Part 145.

A commenter also recommends that the proposal to add a new paragraph (c) to § 145.47 be withdrawn and that the FAA amend § 43.3(i) relating to persons authorized to perform maintenance, preventive maintenance, rebuilding, and alterations. The commenter recommends that the word "maintain" be added to that paragraph to allow a manufacturer holding a type certificate and its subcontractors to perform maintenance, in addition to rebuilding and alterations.

The FAA disagrees with this recommendation. Such an amendment would not establish a parallel maintenance quality control system—as would be accomplished by adding a new paragraph to § 145.47—but would permit a manufacturer's maintenance facility to perform maintenance on a component without showing maintenance capabilities required under Subpart B of Part 145. Further, as foreign manufacturers do not hold production approvals, this suggestion would exclude such foreign manufacturers.

Several commenters express the concern that, as proposed, § 145.47(c) would require a component manufacturer's noncertificated facility that repairs a component for a type certificate holder to send the repaired component part "through" the type certificate holder for quality verification. The commenters point out that such a physical transfer of the repaired component back to the type certificate holder's repair station would be pointless, cause delay, and increase expense. The commenters further maintain that only the manufacturers of the component have the specialized test equipment for a full specification check.

The FAA disagrees that it would be unnecessarily burdensome for components repaired by a noncertificated contractor, as defined in new § 145.47(c), to be routed physically through the type certificate holder's repair station facility. This inspection is essential if such a component manufacturer remains noncertificated. If the component manufacturer were certificated by the United States as a repair station, the requirement to route the component through the type certificate holder would not be necessary, or even appropriate assuming the component manufacturer is properly rated, and the component manufacturer could direct ship a repaired component. Important safety objectives can only be satisfied if the individual components are returned to service by a certificated repair station in accordance with the quality control system of the type certificate holder's repair station, as approved by the Administrator and set forth in the operations specifications and inspection procedures manual of the type certificate holder's repair station. The FAA, in adopting the concept as proposed in § 145.47 for a new paragraph (c), has clarified this intent in the wording of the final rule.

Other commenters referring to the proposed new paragraph, § 145.47(c)(1), express concern that there may be a potential ambiguity concerning whether or not the type certificate holder can use the privileges granted by this section if the product is no longer in production. They also suggest that § 145.47(c)(1) be changed to "the product" as opposed to "a product."

The FAA agrees with both of these suggestions and in § 145.47 (c)(1), as adopted, has eliminated any question as to whether or not a certificate holder that still holds the type certificate for the product can use the privilege granted if the product is no longer in production.

Other commenters express concern that the new authority in § 145.47(c) for holders of repair station certificates, that are also holders of U.S. type certificates, might affect the current authority of all Subpart B and Subpart C repair stations to contract with noncertificated agencies as currently set forth in Appendix A to Part 145.

As stated above, it is the FAA's intent that the authority in new paragraph § 145.47(c) is in addition to the existing contracting authority in § 145.47(b), and § 145.47(b) authority is not affected by this amendment.

A commenter questions whether or not the proposed amendment to § 145.47 benefitting original equipment manufacturers is justified. In the commenter's opinion, the proposed change to § 145.47 would extend the ability to use noncertificated sources beyond warranty work revisions without an apparent safety justification. The commenter contends that the proposed amendment may be based on an FAA assumption that the manufacturing process and the repair process involve basically the same engineering concepts, whereas the manufacturing process and the repair process utilize different analyses.

The FAA agrees that the processes of manufacturing a single product line and of repairing the product do not necessarily involve the same knowledge or perspective. A manufacturer's quality control system and a maintenance quality control system may not be the same, but similarities between these two processes do exist and can be recognized. The amendment takes advantage of the process already established and approved for type certification and manufacture of new products and establishes a parallel maintenance concept. This maintenance process for the repair station of the type certificate holder would explicitly be set forth in its repair station's operations specifications and inspection procedures manual as approved by the Administrator. A component of the type certificated product repaired by the component manufacturer would only be returned to service if the type certificate holder's repair station ensures that the component has been returned to service in accordance with the repair station's maintenance procedures and approved quality control system.

Concern is also expressed that the proposal to add a new paragraph (c) to § 145.47 would permit and encourage a "paper transaction" between the type certificate holder and an associated repair station to create a minimal corporate relationship with a type certificate holder. Under the proposal, the work done by the repair station of the manufacturer type certificate holder would be under the quality control system of the type certificate holder. This will be covered in each repair station's operations specifications and inspections procedures manual for each type certificate holder's repair station that undertakes to exercise the authority under new § 145.47(c).

Commenters contend that there is no assurance that the noncertificated licensee of a noncertificated component manufacturer would have any repair competence, as no requirements are set forth that the licensee establish any corporate relationship or have any repair insight into the component manufacturer's design concept.

The FAA's intent is to permit a licensee of a component manufacturer that actually manufactures the component to also do repair work, if that licensee is approved in the same manner as the original component manufacturer in accordance with the FAA-approved operations specifications and inspection procedures manual of the type certificate holder's repair station.

The proposal for amendment of § 145.47 as contained in the Notice has been modified in accordance with the discussion above.

"Need" for Foreign Repair Stations

Those commenters opposing modification of the foreign repair station rules in Part 145, Subpart C, would retain the existing wording in § 145.71 that a foreign repair station certificate would be issued only if the Administrator finds that the station is necessary for maintaining or altering U.S.-registered aircraft outside of the United States. The Notice proposed deletion of the restriction that such U.S. aircraft be "outside of the United States." Of those commenters supporting the Notice in general, the majority favored deleting this restriction. The commenters point out that the current regulation is a very restrictive approach to foreign maintenance and repairs and is based on factors increasingly out of touch with the international character of modern aviation. They emphasize that the current regulation, which was written for an aircraft fleet that was all U.S. manufactured and only occasionally operated overseas, is inappropriate in today's multinational aviation markets and industries.

Twenty-one commenters supporting the Notice recommend that the required statement of need be eliminated from § 145.71 or, if retained, the word "necessary" be defined more precisely. These commenters suggest that the "need" clause would lend itself to an interpretation whereby the FAA, on grounds unrelated to safety, could determine which repair stations could be used by U.S.-registered aircraft owners. As pointed out in the Notice, the FAA does not intend to implement the "need" clause in such an inappropriate manner.

In developing the proposals contained in the Notice, the FAA desired to retain a requirement for need when certifying foreign repair stations. The FAA has stated that U.S. foreign repair station certification should not be used in a manner that has no relationship to the support of U.S.-registered aircraft or U.S. operators. Further, it is necessary to retain a provision which requires a showing of need to avoid situations that could develop where certification is requested where no reasonable need to support U.S.-registered aircraft could be expected to develop. This provision will ensure that foreign repair stations that would not support U.S.-registered aircraft would not burden U.S. resources for FAA certification or recertification. As to the recommendation to explain the word "necessary" in a more precise manner, the use of this word in existing § 145.71 has not led to the difficulties in administration of the regulation that some commenters suggest. The word "necessary" as retained in § 145.71 will not be used to deny the issuance of foreign repair station certificates to otherwise qualified applicants provided such stations will work on U.S.-registered aircraft.

Scope of Work of Foreign Repair Stations.

Those commenters opposing modification of the foreign repair station rules in Part 145, Subpart C, would retain the existing wording in § 145.73 that a foreign repair station can work on U.S.-registered aircraft and on aircraft engines, propellers, appliances, and component parts for use on U.S.-registered aircraft only if such aircraft are used in operations conducted wholly or partly outside of the United States. The Notice proposed deleting this geographical restriction. All commenters supporting the Notice agree with this deletion. These commenters contend that the geographic limitation in the scope of work of authorized foreign repair stations in today's environment creates an unrealistic regulatory situation. For example, if a foreign repair station performed identical maintenance on the identical components of two identical aircraft of a U.S. air carrier, one aircraft of which operated outside of the United States and the other operated solely domestically, a literal interpretation of existing § 145.73 would result in a determination that the aircraft operating internationally was legally maintained while the aircraft operating domestically was not. The FAA recognized this anomaly in the Notice by pointing out that if properly qualified and certificated by the FAA, a foreign repair station operating in accordance with FAA requirements and surveillance can provide proper and safe maintenance and alteration on U.S.-registered aircraft and their components. This capability does not depend on the aircraft's physical location at the time maintenance or alteration is required and accomplished. The amended rule deletes this geographical restriction.

Return of Warranted Parts to the Type Certificate Holder

RAA and several U.S. commuter air carriers commenting in support of the Notice emphasize the necessity that such operators be given the flexibility to return warranted aircraft components or unusually troublesome components back to the manufacturer, that holds the type certificate, for maintenance. RAA indicates that the commuter industry in the United States currently operates approximately 780 foreign-built aircraft representing about 41 percent of the total estimated commuter aircraft in operation in 1987. Of the 18 most commonly flown types of passenger aircraft in regional airline service in 1987, 12 were foreign manufactured. Those foreign aircraft together constituted over 65 percent of the total seating capacity of the regional passenger industry in 1987.

Several commuter/regional airlines state that the proposed amendments in the Notice would greatly facilitate maintenance support of their foreign-built aircraft by providing more flexibility through increased resources by permitting operators to reduce inventories of high-value replacement components. They also point out that certificated repair stations in the United States have long had the opportunity to acquire the tooling, equipment, and training to support foreign-manufactured aircraft system components and have largely failed to do so.

One operator states that it has been operating the German Dornier DO-228 aircraft for over 3 years, and during this time has been directly involved in an attempt to broaden the scope of domestic capabilities for the maintenance of foreign-built components on its aircraft. This commenter contends that due to the small Dornier fleet size in the United States, there has been resistance by domestic repair stations to purchase the necessary test equipment, special tools, repair parts, inventory, and documentation from the respective foreign manufacturer.

Commenters opposing the Notice disagree with the views of the commuter/regional airline industry on this issue. These commenters question the role and place of commuter/regional airlines in the airline industry as a whole, and suggest that the views of these airlines be discounted. The commuter/regional airlines are those carriers that provide regularly scheduled passenger and/or cargo service with aircraft seating less than 60 passengers and cargo payload capacity of 18,000 pounds or less. These airlines operate pursuant to schedules published in widely used airline schedule guides. The commuter/regional airline industry has shown dramatic growth during the years since the Airline Deregulation Act of 1978 and has been recognized as representing a distinct class of air carriers. Today, these airlines are an integral part of the nation's air transportation system.

Because the Airline Deregulation Act of 1978 (and subsequent Civil Aeronautics Board action) permitted commuter/regional airlines to operate aircraft with up to 60 seats and a payload capacity of up to 18,000 pounds, these carriers were able to operate more efficiently. This development, which allowed carriers to match the most economical airplanes to their market requirements, spurred a worldwide revolution in new aircraft development. Today, a series of new generation light transport aircraft, most of them foreign manufactured, are being put into service by the commuter/regional airlines. According to RAA, in 1986 the 179 commuter/regional airlines carried 28.4 million passengers and the average number of passengers per airline enplaned in 1986 was 158,400. RAA states that regional airline industry revenue passenger miles grew to 4.47 million in 1986.

The FAA recognizes this need as expressed by the regional airline industry and others for operators to be able to return warranted parts to a type certificate holder for maintenance, not only by the adoption of the rules relating to Part 145 regarding foreign repair stations, but by the amendment to § 135.443 as well.

Impact on Air Safety

Two thousand and seventeen commenters express concern with an anticipated negative impact of the proposal on air safety. Several state that they had firsthand experience with poor quality work performed overseas. Some specifics relating to safety include the lack of quality control in foreign shops, work permitted to be done by unqualified people, and the lack of tools and facilities necessary to maintain aircraft effectively. Many commenters express an opinion that the standards of foreign repair stations are considerably and routinely lower than the standards of U.S. domestic repair stations. The overriding concern expressed by such commenters is that work is being done in foreign repair stations by non-U.S.-licensed mechanics. Many commenters are concerned about work being done and approved by noncertificated supervisory and inspection personnel as well. Because of these points, the commenters conclude that a rash of "bogus parts" would appear, and unauthorized replacement parts for use on U.S.-registered aircraft would result from the change under the proposal.

These commenters also contend that air safety would be compromised, because translation difficulties are currently being encountered when maintenance records are obtained on aircraft and components repaired and operated outside of the United States. In particular, the commenters point to difficulty in obtaining adequate translations of repair records since "some languages do not have technical terms which can be translated into English." These commenters conclude that changing the foreign repair station regulations without a uniform language requirement for maintenance records would increase the likelihood of inadequate records and compromise the FAA's ability to regulate and enforce its own requirements. They also state that the Notice should be withdrawn, because the proposals in the Notice do not include assurances that the quality of aircraft maintenance performed by foreign repair stations is equal to that performed by domestic repair stations.

No substantive information or examples were submitted by these commenters in support of their allegations that if the proposed changes were adopted there would be a negative impact on air safety.

The FAA has stated that if the proposals in the Notice are adopted, an equivalent level of air safety will be retained. The FAA has concluded that these changes will not derogate safety. Foreign repair stations, which have been found properly qualified and certificated by the FAA and have been operating in accordance with FAA requirements and surveillance, have been providing safe and proper maintenance and alteration on U.S.-registered aircraft and their components for almost 40 years. No substantial evidence to the contrary has been presented by any commenter. The FAA intends that this safe maintenance will continue and that safety will not be adversely affected by the adoption of this rule. Each foreign repair station must prove to the FAA that it fully complies with all of the requirements to be an authorized U.S.-certificated repair station before the FAA will issue it a certificate to work on U.S.-registered aircraft. These requirements are similar to U.S. domestic repair stations except that foreign repair stations do not require U.S.-certificated airmen in inspection and supervisory positions. However, the FAA does review the qualifications of these airmen, even if they are certificated by the country in which the station is located, to ensure that they are able to perform, supervise, and inspect the work for which the repair station is rated. The foreign repair station or rating must be renewed every 12 or 24 months in accordance with § 145.17. If at any time the repair station fails to comply with the FAA requirements, its certificate can be suspended and/or revoked as has been the case in the past. The FAA has the power of emergency suspension if the situation warrants.

When the Administrator issues a foreign repair station certificate, a finding is made that the holder is competent to perform safely the repairs for which it is rated. Prior to the issuance of such a certificate, a representative of the Administrator reviews the detailed application which is required to be submitted, analyzes the station's proposed inspection procedures and quality control system, examines the physical facilities of the repair station, scrutinizes the organization and the personnel who are to perform these functions, and assesses the outside sources that the station intends to utilize. Only after this safety review does FAA consider issuance of a foreign repair station certificate.

Thus, the certification process for a foreign repair station is substantially the same as the process the FAA uses for domestic repair facilities and involves the same standards. If a foreign repair station has been found to be competent to repair a U.S.-registered aircraft operating wholly or partly outside of the United States, as permitted under the current rules, then it should be equally competent to make those same repairs for aircraft operating within the United States. When found properly qualified and certificated by the FAA, a foreign repair station, in accordance with FAA requirements and surveillance, can provide proper and safe maintenance and alteration on U.S.-registered aircraft and their components. This amendment does not change that fact.

Under current regulations for domestic repair stations, only an individual in a supervisory or inspection category need be certificated as an airman; consequently, a person performing routine maintenance need not be an FAA-certificated airman. However, as to supervisory and inspection personnel, both the Civil Aeronautics Act of 1938 and its successor, the Federal Aviation Act of 1958, as amended, specifically provide that individuals employed outside the United States in charge of the inspection, maintenance, overhaul, or repair of aircraft, aircraft engines, propellers, or appliances may, to the extent that the Administrator may provide, be excepted from the requirement to hold an appropriate U.S. airman certificate. This statutory mandate was recognized in the adoption of the foreign repair station regulations in 1949. This exception, authorized by Congress, is being carried out by the FAA.

As to the contention that inadequate maintenance records are obtained from foreign repair stations because some languages do not have technical terms which can be translated into English, the *Lexicon of Terms Used in Connection with International Civil Aviation* of the International Civil Aviation Organization (ICAO) provides for uniform use of such technical terms. Also, the ICAO Standards and Recommended Practices require adequate recordkeeping, regardless of the language.

In a letter to the FAA, the National Safety Council (NSC) recommends that the FAA not amend §§ 145.71 and 145.73. NSC is of the view that foreign repair stations should not provide modification, major repair, or overhaul work without inspection by U.S.-licensed personnel, unless the aircraft are operated wholly outside of the United States. NSC also refers to a contact with the U.S. Air Force Inspection and Safety Center (AFISC) who is familiar with foreign standards. According to the AFISC contact (as related by the NSC), no AFISC personnel would agree that foreign regulatory standards are equivalent to U.S. standards, and "... if foreign nationals are doing our maintenance work, we could be in trouble." AFISC personnel, as well as NSC, are apparently of the opinion that the proposals as contained in the Notice are solely for monetary purposes and that the FAA did not consider the actual safety impact. On the other hand, the FAA is advised that the U.S. Air Force has relied heavily on foreign sources to repair its deployed assets for many years. Such reliance involving airframes, engines, and exchangeables increases Air Force readiness and sustainability by retaining these assets close to the operating locations where they would be used during conflict. Moreover, the Air Force has advised that "... we have found the reliability of foreign work to be comparable to U.S. work."

FAA Surveillance

Six hundred and fifty-eight commenters contend that if the proposals in the Notice are adopted, the FAA would be unable to monitor foreign repair stations effectively, due to limited inspector personnel, and compliance monitoring and enforcement would be impossible. Among such commenters are the Transport Workers Union (TWU) and the Aeronautical Repair Station Association (ARSA). According to TWU, the ratio of FAA inspectors to air carrier operators has significantly decreased since deregulation. ARSA contends that there is a serious inadequacy in the FAA's inspection and enforcement system which has a direct bearing on these proposals. ARSA further states that its members have reported that the average interval between FAA physical plant inspections and document reviews ranges from 6 to over 36 months with the typical interval being 18 months. Many commenters express belief that the FAA is already stretched beyond its limits without incurring additional responsibilities.

The cost to the FAA for additional inspectors is addressed by many commenters. Although Part 187 permits a charge for certification, these commenters contend that the costs of inspector hiring, training, etc., cannot be recovered.

Two aeronautical authorities, from the United Kingdom and the Federal Republic of Germany, state that they do not believe there would be any increase in applications for FAA foreign repair station certificates if the proposals in the Notice are adopted because, during the past 18 months of debate on the foreign repair station issue, there has been little or no increase in the number of organizations (repair stations that are not U.S.-certificated) expressing an interest to either government for certification.

A large domestic repair station, generally supporting the Notice, contends that it is reasonable to project a reduction in the approximately 200 existing foreign repair station certificates by the end of 1988. This commenter bases this contention on several factors: (1) The FAA appears to have implemented a general policy of reissuing Part 145 certificates for 12 months rather than 24 months so as to reduce the number of existing certificates; (2) it is fair to assume that the FAA will review foreign repair station certificate applications more rigorously in the future; (3) there will be no surge in the number of foreign repair station certificates granted to organizations located in less-developed countries with low labor costs since the FAA will exercise more scrutiny of a foreign repair station certificate application from a less-developed country; (4) if there are any cost advantages in terms of lower wages, those labor advantages are being offset by the change in the relative value of the foreign country's currency with the dollar; and (5) an air carrier will carefully assess a number of factors prior to committing to a foreign repair station, including the continued availability of that facility as a source of maintenance.

This commenter further contends that the certification and surveillance system conducted by the FAA is critical to the integrity of foreign and domestic repair stations, as well as all entities regulated by the FAA. If there is any shortfall between the cost incurred by the FAA in surveillance and certification of foreign repair stations and the charges assessed for those services, immediate amendment of Part 187 to recover those costs should be initiated.

Several U.S. air carriers state that they do not believe any increase in the number of foreign repair stations servicing airline aircraft would approach the magnitude suggested by the FAA. The 50 to 100 percent increase mentioned in the Notice was intended only as an example. Those numbers were used to demonstrate that even for a very large percentage increase, the effects would be minimal. These commenters state that those foreign repair agencies with a capability and capacity to service U.S.-registered airline aircraft have already become certificated within the past 39 years, and that resources available to the FAA from the fees assessed foreign r pair station applicants are sufficient to fund the necessary personnel to provide the required inspections.

In addition, these air carriers note that foreign repair stations are not only subject to the same FAA surveillance imposed on domestic repair stations, but, in addition, all work performed for a U.S. airline by any outside repair agency, either domestic or foreign, must be accomplished in accordance with the air carrier's FAA-approved maintenance operations specifications. Furthermore, the records of all work performed by such repair agencies must be made and maintained in accordance with the current Federal Aviation Regulations. Thus, these air carriers contend, not only will the FAA perform its surveillance responsibilities, but the U.S. airlines also will continue to exercise surveillance over any work performed for them by foreign repair stations.

The FAA is dedicated to meeting its responsibilities under the Federal Aviation Act of 1958, as amended, and will continue to do so. It is anticipated that by modifying these restrictions related to a determination of need and to the scope of work to be conducted by foreign repair stations, a number of noncertificated foreign facilities can apply for FAA certification. This could have some impact on FAA certification and surveillance resources. It is difficult to anticipate the increase in foreign repair stations that might result from this amendment; however, based upon the domestic experience, the resource impact should be minimal. The FAA will respond to any increased workload.

There are approximately 900 FAA inspectors now responsible for domestic repair stations. This translates into approximately 4½ repair stations per inspector. There are now approximately 200 foreign repair stations. If that number increased to 300 or 400, and the number of repair stations per inspector were the same as the domestic case, it would require an increase of 22 to 44 inspectors. Thus, even for an increase of 50 to 100 percent in the number of foreign repair stations, the increase in the number of required inspectors would be less than 5 percent of the current inspector work force. The FAA will continue the surveillance of the existing certificated repair stations, domestic or foreign, and the influx of any new ones. Having experienced the problems associated with deregulation and an expanding industry with a declining FAA inspection work force, the FAA has grown highly sensitive to the need for a safety surveillance work force equal to the work demands. In addition, the certification and surveillance responsibilities of the FAA for foreign repair stations will make full use of information provided by local airworthiness authorities when appropriate, thus enhancing the capabilities of the FAA work force. In any event, there will be no derogation in safety because of the rule as adopted. Regarding the costs incurred by the FAA in the certification and surveillance of foreign repair stations and the minimal fees currently assessed for those services, future rulemaking will be conducted to review the adequacy of the fees prescribed in Part 187.

FAA Enforcement

Several commenters point out that if the proposals in the Notice are adopted, the FAA could not enforce its regulations, because foreign businesses or individuals could not be prosecuted by the U.S. Government. Although the commenters state that the United States cannot levy civil penalties against foreign violators, they do not provide any explanation to support this conclusion.

Under this proposal, the FAA would retain enforcement oversight over U.S.-certificated foreign repair stations through certificate action and civil penalty action. Moreover, Public Law 100-223 amended Section 901 of the Federal Aviation Act of 1958, as amended, to provide for a two-year civil penalty demonstration program for violations of the Act or any rule or regulation issued thereunder which occur after December 30, 1987. Under the demonstration program, the Administrator may assess ("order") civil penalties not to exceed $50,000, after notice and the opportunity for hearing. This will allow FAA to adjudicate those civil penalty actions without referring them to a U.S. attorney for adjudication in a U.S. District Court. In the case of civil penalties in excess of $50,000, if the parties cannot reach a compromise settlement, the actions will continue to be adjudicated by referring them directly to a U.S. attorney for adjudication in a U.S. District Court.

In those instances where a respondent foreign repair station or foreign mechanic fails to pay a civil penalty (not in excess of $50,000) assessed under the demonstration program or fails to offer and pay a compromise civil penalty (in excess of $50,000) acceptable to the Administrator in full settlement of the alleged violations, the FAA may have difficulty in obtaining in personam jurisdiction which is necessary to pursue a collection action in the appropriate U.S. District Court. However, the fact that many foreign repair stations have designated agents for purposes of service in the United States obviates the problem. In any event, where civil penalty actions are unsuccessful, the FAA can take certificate action and this enforcement mechanism will be more than sufficient to ensure that safety is maintained. The FAA has not had substantial difficulty in enforcing violations of the FAR committed by foreign repair stations or a foreign mechanic in the past and does not foresee such difficulties in the future.

Loss of Jobs

Among those opposing the proposal, the majority express concern over loss of jobs in the United States and the general negative impact on the U.S. economy that would result if the proposals are adopted. Twenty-four hundred and twenty-six commenters consider the loss of jobs as the major factor in their opposition to the proposal. The magnitude of concern varies from fear for the individual's job to "several million" jobs lost nationwide, including jobs in related industries. Many commenters express concern with the potential impact on the national economy and on specific cities such as Tulsa, Oklahoma, and Kansas City, Missouri. The Professional Aviation Maintenance Association (PAMA) expresses concern that sufficient consideration was not given by the FAA to the loss of jobs. PAMA questions the statement in the Notice that the need for maintenance service will increase in the United States; PAMA contends that maintenance jobs will decrease because production of general aviation aircraft has decreased by over 90 percent in the last few years. Some commenters state that the aviation industry is going the way of the steel, electronics, and textile industries: overseas. No data or analyses were included in any comment to support these claims.

In contrast to the contentions of those expressing concern over loss of jobs and negative effects on the economy, the following information has been provided to the FAA. The *U.S. Industrial Outlook 1988—Aerospace*, U.S. Department of Commerce, January 1988 states:

> . . . The increasing trend toward international collaboration is fostering an escalation in trade of aircraft engines and aircraft parts, as the world's expanding fleet of civil and military aircraft demands more equipment for maintenance and repair . . . International collaboration in the engine sector is providing a catalyst for trade and is creating an industry which transcends national boundaries . . . The inflation-adjusted value of U.S. aerospace shipments is projected to climb about 3.3 percent in 1988, marking the sixth consecutive year of industry growth. Meanwhile, U.S. aerospace exports and imports will reach record highs of $22.1-billion and $8.8-billion, respectively. The rising trend of industrial collaboration between U.S. and foreign manufacturers in the aircraft sector will be the chief reason for this increase in the flow of trade. Total industry employment is forecast to increase almost 3 percent in 1988, to 836,000.

A study by Gellman Research Associates, Inc., Jenkintown, Pennsylvania, which was jointly sponsored by the Air Transport Association of America (ATA) and the International Air Transport Association (IATA), and included in the ATA and IATA comments, also addresses this issue and refutes the allegation that adoption of the proposal will result in the wholesale loss of jobs in the United States. The study contends that U.S. domestic repair stations currently receive more business from foreign customers than U.S.-certificated foreign repair stations receive from U.S. customers, and that the real threat to U.S. jobs would be the establishment of trade barriers that could result in retaliation affecting both domestic repair stations and other aerospace activities. Also, in this regard, one major U.S. manufacturer supporting the Notice comments that its business as a U.S. manufacturer of a major product depends in substantial part on foreign-source business, not only for new engine buys but for follow-up repair and overhaul product support. This commenter points out that such reliance confirms the international and interdependent nature of today's aviation marketplace. If this foreign source business is lost, which may occur if the proposals in the Notice are not adopted, this manufacturer is of the opinion that the inevitable result would be not only a probable loss of U.S. jobs at its overhaul and repair facilities, but also a probable job loss on the manufacturing side as well.

Impact on National Economy and Trade Balance

Several commenters express concern that foreign repair stations would have an unfair economic advantage over domestic repair stations. ARSA reports that of the ARSA members responding to its survey, 80 percent stated that they thought they would be adversely affected by having to compete with foreign-owned and subsidized firms. The FAA understands that this association represents approximately 90 of the 4,400 repair stations. The number of repair stations responding to the ARSA survey was not stated in the ARSA comments. ALPA states that the Notice requires foreign repair stations to meet less stringent standards and will therefore put domestic repair stations at an economic disadvantage. Some other commenters state that this would be unfair competition, because some foreign countries subsidize the work of their repair stations. They state that there is, therefore, a potential for a negative trade balance. Many commenters relate this change to other industries that have lost jobs to foreign sources, including the steel, automobile, and electronics industries. One commenter states that the domestic air transport industry employs over 100,000 skilled aircraft mechanics, and even the loss of only 10 percent of repair work in the United States means a loss of $300 million in direct wages, causing up to $600 million in net loss of U.S. income. The basis for these estimates is not provided.

Several commenters referred to the FAA view expressed in the Notice that the proposed rule changes would be consistent with the terms of several trade agreements to which the United States is a signatory. These commenters, in supporting the proposal, concur and stress that the proposal is in accord with § 1102(a) of the Federal Aviation Act of 1958, as amended, which requires the FAA to exercise and perform its powers and duties consistently with any obligation assumed by the United States in any agreement that may be enforced between the United States and any foreign country or countries. Under § 103 and Title VI of the Federal Aviation Act of 1958, as amended, Congress mandated that the FAA would perform its functions on the basis of aviation safety considerations. Congress did not delegate to FAA its power to regulate commerce with foreign nations, but rather directed the FAA to perform its duties and functions consistent with international treaties and agreements.

British Airways, as well as several other European commenters, refers to records maintained by the Association of European Airlines (AEA) on its members. It was reported that during 1986, AEA members performed approximately $34.3 million dollar's worth of repair work on U.S.-registered aircraft operated by U.S.-based operators. The $34.3-million figure and all other data contained in these records were based on information provided by 11 AEA foreign air carrier members who accounted for over 80 percent of the repair facility capacity of AEA members. However, in that same year, it is stated that those same AEA members spent $80.9 million, more than double the amount of money spent by the U.S. operators, for repair services performed for them by U.S. repair stations. In other words, U.S. repair stations enjoyed better than a two-to-one trade surplus in aircraft repair work. Furthermore, it is pointed out, that for the past 5 years, AEA figures indicate an increasing trend in favor of U.S. repair stations.

One large U.S.-certificated foreign repair station provided data showing that its gross revenue from its aircraft engine maintenance work worldwide was approximately $77 million in 1986 and $89 million in 1987. However, in 1986 this foreign repair station paid approximately $32 million, or 42 percent, of its total maintenance revenue to various U.S. businesses retained to perform maintenance services as subcontractors and to provide tools; equipment; spare parts such as turbine blades, vanes, and discs; components; and surplus supplies. The flow of such funds to the United States increased in 1987 to approximately $39 million. This foreign repair station expects this trend to continue in the future.

One foreign air carrier reports that it purchased $57 million in U.S. maintenance services in 1986 and performed $47 million in maintenance services for U.S. customers. Another large foreign air carrier reports that it spent $11.2 million on contract repair of its aircraft in the United States in 1986 and received just over $5 million from services performed for U.S. air carriers.

British Airways also points out that it is a matter of public record that since 1986 the value of the U.S. dollar has significantly declined relative to the value of virtually all of the national currencies of the AEA member airlines. As a result, British Airways believes that, compared to 1986, it would now be significantly more expensive for U.S. carriers to have repair work performed by repair stations operated by AEA members and significantly less expensive for AEA member carriers to utilize the services of U.S. domestic repair stations.

In addition to the comments of ARSA, there were 10 domestic repair stations that commented on the Notice. Three of these repair stations support the proposals in the Notice. One such commenter states that, because the FAA is authorized to promote the development of civil aeronautics under the Federal Aviation Act, the proposals in the Notice should be promulgated as a final rule.

One commenter, although a member of PAMA, disagrees with PAMA's stated opposition that the proposals would have a negative economic and trade balance impact. The commenter states that protectionism is a delicate art, and protectionism should be practiced by the consumer, not the government, to minimize retaliation. The commenter points out that the balance of payments is of concern to all U.S. citizens, but so is the ability to obtain aircraft maintenance in a timely manner by a qualified repair station in accordance with the Federal Aviation Regulations.

Other commenters supporting the proposals as contained in the Notice provide information specifically on the effect of the proposals on the national economy and the balance of trade, and submit supporting data. The ATA surveyed 14 of the largest ATA member airlines concerning work performed by foreign repair stations for those U.S. airlines, as well as the work performed by those airlines for foreign operators in 1987. Responses from these airlines indicate that approximately 104 million dollars' worth of work was performed by the U.S. air carriers for foreign operators in 1987. In contrast, approximately 89 million dollars' worth of work was performed for these airlines by foreign repair stations during the same period. Moreover, of this $89 million, approximately $11 million was not performed under the authority of the foreign repair station certificate, but was performed under the airlines' authority to contract maintenance under § 121.363(b) as well as under §§ 121.371(a) and 121.378(a) exemption authority. ATA also points out that U.S. domestic repair stations enjoy substantial advantages over foreign repair facilities in competing for repair work from U.S. air carriers in that they are located much closer to the center of the carrier's operations. This is particularly the case when the repair station is owned and operated by the U.S. carrier concerned.

ATA also surveyed 21 large U.S. organizations that work on transport airplanes and components. All of these organizations reported to ATA that they perform work for foreign operators who are operating in the United States. Ten of these organizations reported that 30 percent or more of their work is accomplished for foreign operators. Similarly, the results of a recent survey by IATA of its member airlines show an expenditure of approximately $184 million in 1987 by 20 foreign airlines for work performed by U.S. repair stations. Charts submitted by ATA and IATA set forth the use of maintenance by foreign operators in the United States and the resultant creation of jobs in this country.

To determine the economic impact of the proposed rulemaking on the domestic airlines, repair stations, aircraft manufacturers, and ultimately U.S. consumers, ATA and IATA jointly commissioned an economic analysis by Gellman Research Associates, Inc. As stated above, a copy of the Gellman analysis is enclosed with both the ATA and IATA comments. ATA is of the opinion that the Gellman analysis demonstrates that (1) The United States would not benefit by restricting international trade in aircraft maintenance; (2) the aircraft maintenanc business does not contain the elements (such as economies of scale) required to provide economic benefits to a nation by restricting trade; and (3) even if an economic benefit from restricting trade in aircraft maintenance did accrue to repair stations, such restrictions would result in higher costs to aircraft operators, such as airlines, which could translate into higher rates and fares. The Gellman report concludes that the ultimate impact would be reduced demand for air transportation by consumers and shippers, accompanied by reduced earnings and employment for airlines.

Foreign commenters also submitted information to indicate that, in their opinion, the proposal in the Notice would not have a negative effect on the U.S. national economy or on the U.S. balance of trade. As referred to above, data taken from the records of the Association of European Airlines indicate that U.S. domestic repair stations enjoyed better than a two-to-one trade surplus in aircraft repair work. In the opinion of British Airways, the AEA figures indicate an increasing trend in favor of U.S. repair stations.

In promulgating the proposals contained in the Notice, the FAA expressed the view that the demand for maintenance services would continue to grow in the United States, as well as at foreign locations, and that the effects of the proposals in the Notice on the increase in foreign maintenance and on the existing work performed in the United States must be considered in the context of expected overall growth in the industry. In addition, the FAA stated that, in light of these views, the proposals would not adversely affect either the national economy or the U.S. trade balance. The FAA encouraged commenters to respond and submit supporting economic and trade data for any beneficial or adverse impacts that would be anticipated to occur should the proposed rules be adopted. Though the views expressed by the FAA were generally challenged by those opposing the proposals as a whole, no supportive economic or trade data were submitted by these commenters to indicate that any adverse impact would occur should the proposed rules be adopted. In contrast, as described above, considerable information was submitted that supports the initial FAA views.

The U.S. Department of Commerce, as indicated in its publication, the *U.S. Industrial Outlook For 1988—Aerospace*, expresses the opinion that the rising trend of industrial collaboration between U.S. and foreign manufacturers in the aviation sector will be the chief reason that the increase in the flow of trade may reach record highs in 1988 of $22 billion for exports and $8.8 billion for imports. The FAA reiterates its position that the proposals as contained in the Notice would not appear to have any adverse impact on the national economy or trade balance.

Impact of War and Terrorism/Sabotage

Over 60 commenters opposing the Notice express the view that, with more U.S. jobs lost to foreign facilities by enactment of the proposals, there would be fewer qualified mechanics and maintenance facilities available to the United States in the event of war. They also express concern that U.S. aircraft would be more susceptible to international terrorism or sabotage activity. No supporting data were submitted by the commenters espousing this issue.

As stated above, the FAA has been advised that the U.S. Air Force (USAF) has relied heavily on foreign sources to repair its aircraft for many years so that USAF readiness and sustainability can be increased by retaining its aircraft close to operating locations where the aircraft would be used during conflict.

In the nearly 40 years since U.S.-registered aircraft have been utilizing foreign repair stations, the threat of war or terrorism/sabotage has not been a problem; there is no reason to believe the amendments adopted in this rule would change that.

Drugs

Several commenters express concern over the use of illegal substances by personnel overseas. The commenters state that drug use is checked in the United States by the growing practice of testing for illegal substances, which may not be the case at foreign repair stations. Testing for drug use in the aviation industry is a matter of growing importance The FAA has initiated other regulatory actions in this area. Therefore, the commenters' concerns are outside the scope of this rulemaking.

Exemption Process

Over 15 commenters opposing NPRM No. 87-12 point out that the proposed rule is not necessary, because exemptions currently permit certain work to be performed overseas by foreign repair stations.

The FAA has handled over 100 exemption actions from petitions filed by U.S. air carriers for relief from the operating Parts of the regulations (Parts 121 and 135) to permit these carriers to use foreign repair facilities that otherwise would not be available under current regulations. Exemptions were granted to air carriers who operate foreign-manufactured aircraft and/or foreign-manufactured components installed on U.S.-registered aircraft, and have limited access to qualified repair and overhaul facilities in the United States. As an example, one U.S. air carrier commenting on the Notice points out that it uses a foreign-manufactured air compressor, and there is no U.S. domestic repair station authorized or equipped to overhaul and repair such a unit. The FAA has found that allowing such carriers to utilize experienced type certificate holders and U.S.-certificated foreign repair facilities with trained personnel, who are qualified to perform work on original foreign-manufactured component parts, provides a level of safety equal to that provided by the rules from which the exemptions have been sought. While the FAA has granted exemptions to U.S. air carriers in these cases, that mechanism does not provide a solution to all of the problems brought about by the increasingly international character of U.S. air carrier operations. As stated by one U.S. air carrier, the exemption process not only increases the workload of an already heavily burdened FAA staff, it poses serious problems for carriers requiring prompt maintenance. The unavoidable delay caused by the need to prepare, file, and obtain an exemption can be a serious problem for a carrier that faces unexpected maintenance problems. Furthermore, the exemption process is not only time consuming and burdensome for the petitioner, but is intended to cover only unique problems of a person, rather than classes of problems.

Bogus Parts

Over 75 commenters oppose the proposal contained in the Notice contending that there would be increased use of unauthorized or "bogus" parts and components on U.S.-registered aircraft if the proposals are adopted. The International Association of Machinists (IAM) refers to the large amount of foreign parts not maintained according to FAA specifications that were found during the National Air Transportation Inspections (NATI) and the investigation of the crash of an Arrow Air DC-8. Other than IAM's reference, no supporting documentation was submitted on this issue.

The problems encountered during the NATI program are complex, involving repair station authority and surveillance issues. Some of the problems associated with repair station authority are addressed by this rulemaking in that what are currently considered to be "unauthorized" parts are so, simply because of the existing restrictive scope of work that can be accomplished by foreign repair stations. The problems associated with surveillance have been addressed by the FAA and will continue to be closely monitored.

Dissolution of U.S. Air Carrier Maintenance Operations

Over 45 commenters that oppose NPRM No. 87-12 express concern that airline management, in supporting amendment of Part 145 in regard to foreign repair stations, is looking only at maintenance costs, not quality, and that airline management would be quick to move all of their airline overhaul facilities out of the country. These commenters contend that if the proposals are adopted, U.S. air carriers would completely dissolve portions of their maintenance operations and send all component and aircraft work overseas. No substantive data were presented to support the above contention.

The FAR place full maintenance responsibility on the operator. Airline comments supporting the proposal point out that U.S. carriers have, and will continue to have, the overwhelming portion of all maintenance work performed in the United States. This is borne out by U.S. airline testimony before Congress on the use of foreign repair stations by U.S. airlines (*Hearing Before the Aviation Subcommittee of the House Committee on Public Works and Transportation*, 100th Congress, First Session, July 28, 1987, pages 59, 92, and 362). ATA's comments supporting this Notice point out that there is more to consider in the cost of maintenance than the cost of the labor, such as overhead, depreciation of sophisticated equipment, inventory costs, shop capacity, delays in shipment of aircraft or components to foreign shops, and the availability of skilled labor to perform the maintenance. ATA takes the position that the United States is well in the lead in these areas.

RAA, in supporting the proposals in the Notice, states that U.S. regional airlines do not, as a rule, operate revenue flights outside of the United States. Thus, regional airlines do not rely heavily on foreign repair stations to do work that could be done in this country. On the other hand, RAA points out that regional airlines are impacted by FAA rules that prevent such air carriers from sending aircraft and components to the original manufacturer for repair or overhaul to ensure that the manufacturer remains accountable for the quality of the product.

Evidence and arguments submitted by the commenters forwarding information support the conclusion that U.S. airlines prefer to maintain their aircraft at domestic locations.

The FAA does not concur with the contention that, if the proposals are adopted, there will be an exodus of U.S. air carrier maintenance operations overseas.

Foreign Retaliation

Several commenters supporting the Notice point out that failure of the United States to adopt the proposed amendments may be viewed by foreign governments as an overly protection act by the U.S. Government and, under these circumstances, it would be reasonable to assume that if the proposed amendments are not adopted, there would be intense pressures on foreign governments to impose reciprocal restrictions on the use of U.S. repair stations by their national flag carriers. Furthermore, the commenters state that the demand for reciprocal restrictions could easily expand to include other aviation products and services, such as a product manufactured by both domestic and foreign entities.

Aeronautical authorities of the British and German governments (CAA and LBA) remind the FAA in their comments that their governments permit U.S. domestic repair stations unrestricted access to their aviation industry, subject only to the need for current release documentation and records. Any significant difference between the intent of the final rule and the intent of the Notice would be assumed by these governments to be caused by concern for safety standards. They, in turn, would be required to review their own acceptance standards from any foreign source, including U.S. domestic repair stations. The aeronautical authority of the French government (DGAC) states that they are planning to review their regulations related to DGAC certification of foreign repair stations (e.g., U.S. domestic repair stations) under the same technical requirements as French repair stations except in cases where, due to maintenance arrangements or bilateral agreements between authorities, it will be reciprocally recognized that the approvals given by one authority are considered valid by the other.

Other supporters of the proposals also point out that no major foreign government currently imposes any regulatory restrictions on the use of FAA-certificated U.S. repair facilities by its own airlines. These commenters refer repeatedly to testimony at the Congressional hearing on the use of foreign repair stations by U.S. airlines in July 1987 (Hearing before the Aviation Subcommittee of the House Committee on Public Works and Transportation). Mr. Crawford F. Brubaker, the Deputy Assistant Secretary of Commerce for the United States, testified at this hearing that many foreign governments had informed him that retaining existing geographic restrictions on foreign repair stations is inconsistent with the Agreement on Trade in Civil Aircraft which was negotiated pursuant to the General Agreement on Tariffs and Trade (GATT). In his testimony, Mr. Brubaker stated (page 8):

> However, if, in the view of our foreign trading partners this issue is not resolved in a prompt and fair manner, there is a possibility that a dispute action [GATT] might be filed by one or more signatories. Should any trading partner take counteraction, it could be detrimental to both our airlines and to our aircraft industry.

At this same hearing, Pratt & Whitney testimony (page 103) and Boeing Co. testimony (page 101) were to the effect that if foreign governments were to adopt regulations that narrowed their current foreign repair restrictions, the U.S. aviation maintenance industry would suffer a substantial loss of business. The Aerospace Industries Association of America declared that (pages 98 and 99):

> Any regulation that would restrict the free flow of trade in the international airline market would ultimately have a negative impact on the U.S. aerospace industry and the Nation's overall trade balance. Last year, the industry employed 1.3 million people. Loss of competitiveness in the world market could lead to a catastrophic loss of American jobs in this vital manufacturing sector.
>
> . . . Further, the imposition of trade restrictions is clearly not within FAA's purview and should be left to international negotiation. The use of FAA's regulations for protectionism will give rise to reciprocal actions from foreign airworthiness agencies and will undermine the FAA's worldwide credibility in safety.

Commenters raising this issue conclude that foreign retaliation could well result in reduced business by domestic repair stations. These commenters also contend that domestic airframe, engine, electronics, and equipment manufacturers could be targeted for retaliatory measures resulting in higher costs to their businesses, reduced demand for their products, and ultimately reduced earnings and employment.

Paperwork Reduction Act

Information collection requirements in the proposed amendments to § 135.443 have previously been approved by the Office of Management and Budget (OMB) under the provisions of the Paperwork Reduction Act of 1980 (Pub. L. 96-511) and have been assigned OMB Control Number 2120-0039.

Regulatory Evaluation

In promulgating the proposals contained in the Notice, the FAA expressed the view that the demand for maintenance services will continue to grow in the United States as well as at foreign locations. The effects of the proposals in the Notice on the increase in foreign maintenance and on the existing work performed in the United States must be considered in the context of expected overall growth in the industry. In addition, the FAA stated that the proposals would not adversely affect either the national economy or the U.S. trade balance. The FAA further concluded that there would not be a large shift of jobs from the United States to foreign countries.

In light of the above views, the FAA encouraged commenters to respond and submit supporting factual economic and trade data for any anticipated beneficial or adverse impacts should the proposed rules be adopted. The FAA also solicited recommendations for better methods to achieve the objectives of the rules and rule changes proposed in the Notice. Though the views by the FAA were strongly challenged by those opposing the proposals as a whole, no supportive factual economic or trade information was submitted by these commenters to indicate how an adverse impact would occur to the national economy or trade balance should the proposed rules be adopted; nor were any recommendations submitted by these commenters for achieving the objectives of the rules. These commenters desire to retain the status quo and maintain the foreign repair station regulations adopted in 1949 as they are now set forth in Part 145.

Those opposed to the proposals contained in the Notice express concern that foreign repair stations would have an unfair economic advantage over domestic repair stations. These commenters allege foreign repair stations would have to meet less stringent standards than domestic repair stations and tha domestic repair stations would be placed at an economic disadvantage. One unsubstantiated statement alleges that if the proposals are adopted, there would be a net loss in U.S. income of up to $600 million. The basis for these estimates is not provided. An association of repair stations reported that, of its members responding to a survey sent out by the association, 80 percent stated that they thought they would be adversely affected by having to compete with foreign-owned and subsidized firms. No supporting data were submitted by this association, even as to the number of repair stations the association represented, or the number of repair stations responding to the survey. The FAA understands that this association represents approximately 90 of the 4,400 repair stations.

The primary concern expressed in most of the opposing comments is related to the loss of jobs in the United States and the general negative impact on the U.S. economy that would result if the proposals are adopted. A wide range of estimates for lost jobs is offered; however, there is no explanation of how these estimates were made. In general, no data or analyses were included in any comment to support these claims.

As detailed in the *Discussion of Comments* section, commenters supporting the proposals submitted extensive in factual information indicating that foreign entities currently spend up to twice as much in the United States for maintenance as U.S. operators spend abroad. These commenters contend that this trend will continue, because there will not be a dramatic increase in the number of new foreign repair stations. Furthermore, there are a limited number of facilities in the world that can meet the FAA's stringent requirements.

The expectation that trade will not be adversely affected is supported by the U.S. Department of Commerce that concludes the rising trend of industrial collaboration between U.S. and foreign manufacturers in the aviation sector will increase the expected flow of trade for 1988 to record highs. The U.S. Department of Commerce cited figures of $22 billion for exports and $8.8 billion for imports in the aviation sector. This trend towards international collaboration in aircraft manufacturing will also result in the growth of trade in equipment for maintenance and repair, and consequently reciprocal growth in the trade of repair services. This expected expansion supports the FAA view that overall growth in the aviation industry will offset losses, if any, in maintenance and services.

Supporters of the proposals refute the allegations that the rules would create an exodus of jobs from the United States to foreign countries, contending that the allegations are unsupported. As pointed out by such supporters in the *Discussion of Comments* section, there will not be a wholesale use of foreign repair stations by U.S. operators. Also, the U.S. Department of Commerce points out that the world's expanding fleet of aircraft will demand more equipment for maintenance and repair, and the total industry employment for 1988 in the overall aviation sector is forecast to increase by almost 3 percent.

Additionally, as pointed out in the *Discussion of Comments* section, if the foreign repair station rules are not updated and adopted as proposed, and if the United States retains the status quo and adopts a stance of protectionism, there are sufficient indicators regarding the likelihood of some retaliatory action from some foreign governments to adjust their regulations, making them as restrictive as those currently in effect in Part 145. These actions could very well result in a negative impact on the U.S. economy. This possibility is supported by the fact that the U.S. Department of Commerce has been advised by many foreign governments that, in their opinion, retention of existing geographic restrictions on foreign repair stations by the United States is inconsistent with certain international treaties to which the United States is a signatory. These foreign governments have further stated that if they were to take counteraction, it could be detrimental to both U.S. airlines and to the U.S. aircraft industry.

Although expanding access to world markets for aircraft maintenance could result in additional work being done at foreign locations, the FAA must conclude from the information submitted to this docket (Docket No. 25454) that the consequences would not include a major, if any, shift in jobs. Nor, will adoption of these rules have an adverse impact on the national economy or on the U.S. balance of trade. The *Discussion of Comments* section points out that the rules will be beneficial, particularly to U.S. air carriers and to manufacturers (as well as to some domestic repair stations) in their ability to obtain maintenance and repair work on foreign-manufactured aircraft and components. Further, it should also be noted that there are no direct compliance costs to U.S. interests associated with the foreign repair station revisions, because certification as a repair station is strictly voluntary. A loss of some jobs could certainly be possible, if only as a normal effect of any competition; however, the supporting information in the docket does not show that such a major loss would occur.

Though the rule could be restricted solely to foreign manufacturers, this restriction would not fully address many U.S. air carrier problems, particularly in cases where there is no domestic facility capable of performing certain necessary maintenance. Likewise, limiting the scope of work only to warranted items will not cover a situation in which no U.S. domestic repair station is authorized or equipped to overhaul and repair a certain component not covered by warranty.

The airline industry has experienced rapid growth following deregulation resulting in a demand for equipment suitable to the individual operator's requirements. This demand has been increasingly met through international endeavors in the manufacture of aircraft and their components. The demand for qualified maintenance services and facilities has grown as the fleet of foreign-manufactured aircraft has increased, particularly in the regional and commuter airline industry.

Many U.S. operators have not invested the capital required to provide domestic maintenance facilities that are capable of servicing foreign-manufactured aircraft, nor have they been able to attract outside repair facilities to provide the necessary services. Under the existing regulations, some carriers that operate foreign-manufactured aircraft have obtained exemptions to take advantage of the manufacturer's warranty provisions for the products they operate. Presently, some manufacturers are precluded from repairing their own products, because of their repair station's location or their inability to obtain U.S. certification under §§ 145.71 and 145.73.

While the FAA has granted exemptions to U.S. air carriers to permit them to use foreign repair facilities that would not be otherwise available under current regulations, that mechanism does not provide a solution to all of the problems brought about by the increasingly international character of U.S. air carrier operations. The exemption process is time consuming and by its very nature places a repeated and continued burden on a petitioner. It does not take care of unforeseen maintenance needs and is only intended to cover unique problems of an individual person, rather than classes of problems, such as the matter of foreign repair stations. Also, in light of the lengthy negotiation process associated with formulating and refining bilateral agreements, pursuing additional bilateral agreements for maintenance of U.S.-registered aircraft is not considered advantageous in terms of any short-term benefits for the U.S. aviation community.

The FAA has determined that allowing domestic and foreign manufacturers holding U.S. repair station certificates to contract the repair of components to non-U.S.-certificated repair stations, domestic and foreign, under the specific circumstances set forth in the amended § 145.47(c) will not diminish the quality of the repairs, as the components would be approved for return to service under the repair station's quality control process that has been found acceptable to the FAA. This new process will increase the amount of maintenance resources available to U.S. operators, thereby reducing costs and delays associated with their operations.

The amendment to § 135.443(b), which permits a foreign repair station to return an aircraft or part to service after performance of maintenance, similar to existing § 121.709(b), should not result in any adverse impact. Because the implementation of § 121.709(b) has not created any problems, none are anticipated from the change to Part 135. Further, being able to use a foreign repair station to return their aircraft to service would be a major benefit for Part 135 operators.

International Trade Impact Analysis

As set forth in the *Discussion of Comments* section, the amendments contained herein are consistent with the terms of several trade agreements to which the United States is a signatory, such as the Trade Agreements Act of 1979 (19 U.S.C. 2501 *et seq.*), incorporating the Agreement on Trade in Civil Aircraft (31 U.S.T. 619), and the Agreement on Technical Barriers to Trade (Standards) (19 U.S.C. 2531). Not only do these changes reflect the FAA's desire to eliminate unnecessary barriers to international trade, but such action is consistent with § 1102(a) of the Federal Aviation Act of 1958, as amended, which requires the FAA to exercise and perform its powers and duties consistently with any obligation assumed by the United States in any agreement that may be in force between the United States and any foreign country or countries. The economic trade impacts are discussed in the previous section (*Regulatory Evaluation*).

Regulatory Flexibility Determination

The Regulatory Flexibility Act (RFA) of 1980 was enacted by Congress to ensure that small entities are not unnecessarily and disproportionately burdened by government regulations. The RFA requires agencies to review rules which may have "a significant impact on a substantial number of small entities."

The FAA has determined that these amendments are not expected to have a significant impact on a substantial number of small entities. The provisions of this rule are primarily directed toward the activities of foreign repair stations and, therefore, domestic repair stations are not expected to incur any costs for compliance. Consequently, the domestic repair stations should not incur any significant economic impact under FAA Order 2100.14A, September 16, 1986, Regulatory Flexibility Criteria and Guidance. Furthermore, by deleting barriers in the aviation repair station industry and encouraging potential entrepreneurs to introduce beneficial products and processes to the aviation industry as a whole, the amendments are consistent with the Act (see RFA Sec. 2(a)(5)). This is supported by comments received on the Notice.

Of the 10 domestic repair stations that commented individually, 5 indicate that they are large repair stations and not small entities; no indication was given as to the size of the other 5 repair stations. The bulk of those commenters opposing the Notice are individual employees of large entities, particularly large airlines. The majority of the 4,400 domestic repair stations are small entities (businesses with less than 200 employees). These small domestic repair stations are primarily concerned with the smaller general aviation U.S.-registered aircraft and components and are not impacted by an increase or decrease in the number of foreign repair stations. Therefore, the FAA has determined that the amendments are not expected to have a significant impact on a substantial number of small entities and has concluded that a regulatory flexibility analysis is not required.

Federalism Implications

The regulations set forth in these amendments are promulgated pursuant to authority in the Federal Aviation Act of 1958, as amended (49 U.S.C. 1301, *et seq.*), which statute is construed to preempt State law regulating the same subject. Thus, in accordance with Executive Order 12612, it is determined that such regulations do not have federalism implications warranting the preparation of a Federalism Assessment.

CONCLUSION

For the reasons discussed in the preamble and based on the findings in the Regulatory Flexibility Determination and the International Trade Impact Analysis, the FAA has determined that this final rule is not major under Executive Order 12291, and that this rule will not have a significant economic impact, positive or negative, on a substantial number of small entities under the criteria of the Regulatory Flexibility Act. This proposal is considered significant under DOT Regulatory Policies and Procedures (44 FR 11034; February 26, 1979). The regulatory evaluation of this final rule, including a Regulatory Flexibility Determination and Trade Impact Analysis, is printed in its entirety in this final rule and has been placed in the regulatory docket. A copy may be obtained by contacting the person identified under "FOR FURTHER INFORMATION CONTACT."

THE RULE

In consideration of the foregoing, the Federal Aviation Administration amends Parts 135 and 145 of the Federal Aviation Regulations (14 CFR Parts 135 and 145) effective December 22, 1988.

The authority citation for Part 135 continues to read as follows:

Authority: 49 U.S.C. 1354(a), 1355(a), 1421 through 1431, and 1502; 49 U.S.C. 106(g) (Revised Pub. L. 97-449, January 12, 1983).

Amendment 135-30

Traffic Alert and Collision Avoidance System

Adopted: January 6, 1989 **Effective: February 9, 1989**

(Published in 54 FR 940, January 10, 1989)

SUMMARY: These amendments require the installation and use of a Traffic Alert and Collision Avoidance System (TCAS) in large transport type airplanes and certain turbine powered smaller airplanes. The TCAS, which uses the Air Traffic Control Radar Beacon System transponder reply from other aircraft, will provide a collision avoidance capability that operates independently of the ground-based Air Traffic Control (ATC) system, and in areas where there is no ATC radar coverage. The Airport and Airway Safety and Capacity Expansion Act of 1987 directs the FAA to require the installation and operation of TCAS in commercial aircraft flying in the United States. The intended effect of this action is to minimize the possibility of midair collisions involving air carrier airplanes.

COMPLIANCE DATES (WHERE LATER THAN EFFECTIVE DATE):

1. Part 121. TCAS II requirement for operations conducted under Part 121 with more than 30 passenger seats. December 30, 1991.

2. Part 125. TCAS II requirement for operations conducted under Part 125 with more than 30 passenger seats: December 30, 1991.

3. Part 129. TCAS I requirement for operations conducted under Part 129 with 10 to 30 passenger seats: February 9, 1995. TCAS II requirement for operations conducted under Part 129 with more than 30 passenger seats: December 30, 1991.

4. Part 135. TCAS I requirement for operations conducted under Part 135 with 10 to 30 passenger seats: February 9, 1995.

FOR FURTHER INFORMATION CONTACT: Frank Rock, Aircraft Engineering Division, AIR-120, FAA, 800 Independence Avenue, SW., Washington, DC 20591; Telephone (202) 267-9567.

SUPPLEMENTARY INFORMATION:

Background

Regulatory History

On August 21, 1987, the Federal Aviation Administration (FAA) issued Notice of Proposed Rulemaking (NPRM) No. 87-8 (52 FR 32268; August 26, 1987). The NPRM proposed to amend Parts 91, 121, 125, 129, and 135 to require the installation and use of a family of Traffic Alert and Collision Avoidance Systems (TCAS) onboard certain airplanes, as follows:

14 CFR part	Applicability	Equipment	Compliance
91	All	TCAS	Voluntary
121	Large Airplanes	TCAS II/Mode S	3 years after effective date
125	Large Airplanes	TCAS II/Mode S	3 years after effective date
129	Turbine powered airplanes/10 to 19 passenger seats	TCAS I	5 years after effective date
	Turbine powered/20 to 30 seats	TCAS II/Mode S	4 years after effective date
	Turbine Powered/30 seats or more	TCAS II/Mode S	3 years after effective date
135	Turbine powered/10 to19 seats	TCAS I	5 years after effective date
	Turbine powered/20 seats or more	TCAS II/Mode S	4 years after effective date

All comments received in response to NPRM No. 87-8 were considered in adopting these amendments.

On December 30, 1987, the President of the United States signed the Airport and Airway Safety and Capacity Expansion Act of 1987, which, among other amendments, amended the Federal Aviation Act of 1958, Section 601, by adding a new section (f), titled "Collision Avoidance Systems." Title III, section 203 of that act states:

"(a) FINDINGS.—Congress finds that—

(1) the number of near midair collisions is an indication that additional measures must be taken to assure the highest level of air safety in the United States;

(2) public health and safety requirements necessitate the timely completion and installation of a collision avoidance system for use by commercial aircraft flying in the United States;

(3) the Traffic Alert and Collision Avoidance System promises to reduce the threat to life caused by midair collisions, particularly collisions between general aviation aircraft and commercial aircraft;

(4) the Traffic Alert and Collision Avoidance System will succeed only to the degree that other aircraft posing a collision threat use operating transponders with automatic altitude reporting capability; and

(5) the Federal Aviation Administration should continue at a deliberate pace the development of additional technologies, including the collision avoidance system known as TCAS III, to ensure the safe separation of aircraft."

"(b) GENERAL RULES.—Section 601 is amended by adding at the end the following new subsection:

(f) COLLISION AVOIDANCE SYSTEMS.—

(1) DEVELOPMENT AND CERTIFICATION.—

(A) STANDARDS.—

The Administrator shall complete development of the collision avoidance system known as TCAS II so that such system will be operable under visual and instrument flight rules and will be upgradeable to the performance standards applicable to the collision avoidance system known as TCAS III.

(B) SCHEDULE.—

The Administrator shall develop and implement a schedule for development and certification of the collision avoidance system known as TCAS II which will result in completion of such certification not later than 18 months after the date of the enactment of this subsection.

(2) INSTALLATION.—

The Administrator shall require by regulation that, not later than 30 months after the date of certification of the collision avoidance system known as TCAS II, such system be installed and operated on each civil aircraft which has a maximum passenger capacity of more than 30 seats and which is used to provide air transportation of passengers, including intrastate air transportation of passengers."

Airport and Airway Safety and Capacity Expansion Act of 1987, Pub. L. 100-223, section 203 (December 30, 1987).

The FAA has informed Congress that a schedule requiring a "complete" certification of TCAS II equipment within 18 months is extremely difficult because of the different equipment manufacturer designs to be approved; the number of different aircraft types and models; and the large number of commercial carriers requesting approval. Currently, the FAR require that operators apply for a separate supplemental type certificate for each equipment manufacturer's design and each type/model aircraft. Since the ultimate goal of Congress is clearly the actual installation of TCAS, the FAA is promulgating this rule to require the air carriers to install the system prior to the 48-month overall deadline. Therefore, after consideration of the legislation and the particular circumstances, the FAA concluded that these amendments requiring certification and installation of TCAS within 48 months from the date of enactment of P.L. 100-223 (December 30, 1987) constitute compliance with that amendment to the FA Act.

Public Law 100-223 also mandated an FAA regulation requiring the use of altitude-encoding transponders in certain airspace and terminal areas. An automatic altitude-encoding transponder, designated as Mode C (or Mode S, since all Mode S transponders incorporate this feature), provides the air traffic controller with aircraft altitude in 100-foot increments. This information is displayed on the controller's radar screen with the data block for each tracked aircraft. The information is transmitted automatically in response to radar interrogations of the aircraft's radar transponder, and no communication with the pilot is required.

In response to Public Law 100-223 and previous FAA regulatory proposals, the agency adopted Amendment 91-203, *Transponder Automatic Altitude Reporting Capability Requirement*, in June 1988 (53 FR 23356, June 21, 1988). The rule requires the use of a Mode C transponder for all operations within and above a terminal control area (TCA) or airport radar service area (ARSA); within 30 miles of a TCA or within 10 miles of certain other airports; and above 10,000 feet above mean sea level (MSL).

A TCAS II or III unit receives information from the Mode C transponder on a target aircraft. The TCAS unit processes the information to provide the pilot of the TCAS airplane with altitude information on potentially conflicting aircraft and to provide vertical resolution advisories (RA's) (to climb or descend) to avoid the conflict. Mode C equipment installed on other aircraft is the only source of altitude information for a TCAS unit.

Discussion of Comments

Seventy commenters responded to Notice No. 87-8. Thirty-three respondents favor the proposed rule to require TCAS; however, seventeen from this group expressed reservations about the phase-in period and ten stated that the final rulemaking should be postponed.

A breakout of the respondents showed the following number of commenters by interest category:

Commercial aviation—6 foreign and 13 domestic carriers	19
Public comment—7 general public, 2 state representatives, and 1 consumer group	10
Government agencies—8 foreign and 2 domestic	10
Industry governing bodies	7
Industry/technical groups	9
Associations	8
Research organizations	2
Airframe manufacturers	4
Training/educational group	1
Total	70

Phase-In Period

Thirty-five commenters expressed concern regarding the phase-in period for TCAS. Of these, 12 requested an implementation time of 4 years minimum up to 7 years, with a 5-year period as the most popular timeframe mentioned.

Four commenters wanted a uniform time schedule for installation, instead of the uneven phase-in time proposed in the NPRM.

Only one person, a state government representative, mentioned shortening the phase-in period. That commenter wants TCAS installed as soon as possible.

Three commenters, including two manufacurers, expressed the opinion that the proposed deadline could be met.

Public Law 100-223 mandated the installation and operation of TCAS II on each civil aircraft that has a passenger capacity of more than 30 seats and that is used to provide air transportation of passengers including intrastate air transportation of passengers. The FAA cannot promulgate rulemaking contrary to the Public Law even in response to public comments to the proposed rule. Therefore, those comments proposing an extended phase-in time for aircraft with more than 30 passenger seats will not be addressed here.

The FAA agrees that those aircraft with 30 passenger seats or less and operated under FAR Parts 125 and 135 should not be required to have installed a TCAS II. Part 129 and Part 135 operators of turbine-powered aircraft with 10 to 30 passenger seats will be required to have a TCAS I system installed and operating.

While the technology required to build a TCAS I is fully developed, currently, there is no TCAS I design approved, and no manufacturer has built a TCAS I unit. There are three or four manufacturers considering the merits of developing a TCAS I design. One system is based on a passive design concept, another design is based on active interrogation, and a third concept is a combination of active/passive. These concepts have not been developed to a point where it can be judged whether any of the concepts will function as required. Considering the time required to develop, test, and obtain approval of TCAS I design and the time required to develop production facilities, coupled with user installation and training requirements, the need to allow additional calendar time became apparent. The additional time reflected in this final rule provides for the fabrication, certification, and operational evaluation of TCAS I unit prior to installation on passenger carrying airplanes.

In consideration of the absence of an approved TCAS I system at this time, the compliance dates for TCAS I installation and operation have been extended from 5 years to 6 years for those aircraft operating under Parts 129 and 135 with 10 to 30 passenger seats. Additionally, the FAA will provide test data and certain test assistance, and will participate with interested manufacturers and users to evaluate and test TCAS I units in accordance with Technical Standard Order (TSO)-C118, and participate in a field evaluation of TCAS I units with Part 135 carriers.

Two manufacturers announced publicly at the Airlines Electronic Engineering Committee (AEEC) International Conference on TCAS Implementation, December 1 and 2, 1987, that their production of TCAS II systems can be adjusted to accommodate any air carrier installation schedules.

Postpone Final Rulemaking

Most commenters stated that the final rulemaking should be postponed until the results of the Limited Installation Program (LIP) system tests could be analyzed. The LIP, which continues the operational evaluation of TCAS II, requires analysis and periodic reporting to the FAA. The primary objective of the LIP is to evaluate the TCAS II preproduction units in air carrier service using line pilots. United Airlines, the first airline to apply for supplemental type certificate for installation of a TCAS II system for the LIP, completed their 6-month evaluation and currently is in the process of completing the data analysis. During the United evaluation a total of 2,066 flight hours were logged on the two TCAS II equipped airplanes. The system generated a total of 933 traffic advisories (TA's) and 68 RA's. Northwest Airlines is scheduled to begin their LIP evaluation on or about September 1, 1988. Northwest will use two MD 80 airplanes for the evaluation.

The FAA believes that any fundamental problem existing would have shown up early in the LIP program. None has to date, nor has any major problem been identified in the Piedmont Phase I or II programs. (The 5-month evaluation of TCAS II on two Piedmont Airlines B-727 airplanes between November 1981 and May 1982 is referred to as Piedmont Phase I. The primary objectives of this evaluation were to assess the operation of TCAS in an air carrier operational environment and to develop an understanding of the potential effect of alerts on air carrier flight operations, flight crews, and ATC controllers and on the frequency of alerts and the circumstances under which they occur. The operational evaluation of TCAS II on a Piedmont Airlines B-727 airplane between March 1987 and January 1988 is referred to as Piedmont Phase II. The primary objectives of this operational flight evaluation were to assess the impacts of TCAS operation on flight crew workload; evaluate the impacts of TCAS on the ATC system and individual controllers; and obtain flight crew comments on the system's design parameters, displays, and operational procedures. The evaluation was also designed to provide additional data on the frequency of TCAS alerts and the circumstances under which TCAS alerts occur, evaluate the effectiveness of the flight crew training program, and identify and resolve equipment certification issues. See NPRM 87-8).

Most non-U.S. commenters expressed varying degrees of displeasure at the proposed unilateral action of the United States to mandate the installation and use in U.S. airspace of a collision avoidance system in *the absence of internationally agreed-upon technical specifications and operational procedures* for such an important system. These international standards, normally developed through the vehicle of the International Civil Aviation Organization (ICAO) for equipment such as this prior to introduction into the international aviation system, are designed to insure equipment interoperability and avoid equipage redundancy. Hence, most foreign observers would like to see the U.S. equipage/use requirement delayed and, at the very least, its application to foreign operators under 14 CFR Part 129 delayed until such international standards are in place (currently expected to occur in late 1990) and a sufficient period of time is permitted for system acquisition and installation.

With regard to the present status of the effort to standardize the Airborne Collision Avoidance System (ACAS—the international equivalent of the U.S. TCAS), ICAO is relying on the services of technical and operational experts provided by 15 countries and 4 international organizations—organized into the Secondary Surveillance Radar Improvements and Collision Avoidance Systems Panel (SICASP)—to develop these important technical equipment specifications and operational procedures, which will result in the safe and efficient use of this system internationally. United States participation in this effort has been very active and has included the FAA, the National Aeronautics and Space Administration (NASA), U.S. industry groups, and FAA's two major TCAS contractors, MITRE and Lincoln Labs. At the behest of U.S. and other participants, a concerted effort is being made by this group to complete its work at a spring 1989 meeting, at which time proposed ACAS international standards will be presented to ICAO's Air Navigation Commission and Council for final review and approval. Assuming no unexpected difficulties materialize during this review process, the most critical changes to ICAO documents—the technical ACAS equipment specifications in ICAO Annex 10—should become applicable internationally in late 1990.

Four commenters mentioned postponing the rule until after the Radio Technical Commission for Aeronautics (RTCA) Minimum Operational Performance Standards (MOPS) changes 6 and 7 were complete and Aeronautical Radio Inc. (ARINC) specifications were in final form. The RTCA MOPS, change 6, was not completed in time for publication in TSO C-119, TCAS II; therefore, the TSO references FAA Report No. DOT/FAA/SA-88/3, *Required Modifications to the Traffic Alert and Collision Avoidance System (TCAS II) Minimum Operational Performance Standards (MOPS)*. When change 6 is approved by the RTCA Council, the TSO will be revised to reference RTCA DO-185 changes 1 through 6. Change 7 is not required for FAA approval.

One manufacturer recommended delaying the rule and holding the docket open until the LIP is finished and all reports are made available and the MITRE report 87W00157 is released and reviewed. The United Airlines LIP report has been completed and made available in the docket. The Mitre report 87W00157 was revised and adopted in the TSO.

Public Law 100—223, Section 203, does not permit compliance dates for TCAS II later than those adopted in this rule, and the FAA could not consider comments requesting later dates.

Technical Discussion

Thirty-three commenters included a discussion of TCAS, ACAS, Mode S, Mode C, or ATC technologies in their comments. Many in this group expressed the opinion that the technology still needed to be "fine tuned" before implementation. The FAA has provided for fine tuning of TCAS through the RTCA SC-147 committee working groups. The RTCA MOPS change 6 will contain additional fine tuning features, including simplification of the TCAS-to-TCAS coordination process, elimination of the advisory invalid indication, and many other recommendations.

One commeter postulated that the requirements for all aircraft to have "active TCAS systems would overload and violate the FAA's own requirement of limiting radio use for TCAS purposes to 1 percent of the total usage of the frequency that TCAS would operate on." This issue is not new. It was identified as one of the main development questions when, in 1982-84, the Beacon Collision Avoidance System (BCAS) design was extended to TCAS by increasing the ability to operate effectively under high density conditions. In the Lincoln Laboratory report that documents this development effort, "TCAS II: Design and Validation of the High-Traffic-Density Surveillance Subsystem," this issue is clearly identified (ATC-126, Feb-85, pages 2-6 to 2-9).

The TCAS II includes a provision called "Interference Limiting," the purpose of which is to insure that TCAS transmissions will not cause any degradation of any other systems operating in the 1030/1090 MHz frequency bands. During the TCAS development, it was recognized that a number of possible interference mechanisms needed to be considered: (1) reception of TCAS interrogations by transponders, (2) reception of TCAS replies by ground-based ATCRBS equipment, and (3) self-suppression of the transponders on the TCAS aircraft. It was decided to place limits on TCAS transmissions in such a way as to give TCAS a low priority in these frequency bands. In doing this, a rather severe limit of 2 percent was adopted as the maximum interference that can be contributed by all of the TCAS transmissions in a given area. The Interference Limiting standards were initially determined analytically from basic principles of physics. It was found that a relatively simple model could be implemented to provide the ability to adapt to any given density of aircraft and any percentage that are TCAS equipped. Subsequently, the interference limiting design was assessed by a large interference simulation of the 1030/1090 MHz bands. This simulation study was conducted by the Electromagnetic Compatibility Analysis Center (ECAC), making use of their experience in assessing many other similar interference issues. The simulation included a large number of aircraft, each with a given flight path, acting together with a large number of ground-based interrogators, with power levels, beamwidths, and other characteristics relating to operating conditions predicted for the 1995 timeframe. Two main conclusions resulted from this study. One was that the 2 percent interference allocation for TCAS was not exceeded. The other was that radio transmissions attributable to TCAS were completely insignificant in their effects on the performance of the ground-based ATCRBS equipment. As a result of this analysis and testing, the FAA concluded that there will not be a frequency interference problem.

One manufacturer submitted the following comments not previously addressed.

Comment:

Equipment designs tested to date have not represented production TCAS II equipment. Representative equipment must be tested so that its acceptability in service can be assessed. Logic included in equipment tested, or to be tested (LIP), does not include corrective logic for "Altitude Crossover" or "TCAS-Invalid" deficiencies.

FAA response:

The FAA will conduct flight tests of production units to validate the corrective logic.

Comment:

Display requirements for "Glass Cockpits" will not be defined before mid-1988.

FAA response:

The FAA defined and issued display requirements for "Glass Cockpits" in an advisory circular (AC) entitled *Airworthiness and Operational Approval of Traffic Alert and Collision Avoidance Systems (TCAS II) and Mode S Transponders*, AC No. 20-131, October 3, 1988.

Comment:

Certification requirements, analysis, simulation, and flight test are not adequately defined, nor is a flight criticality level for TCAS II certification specified.

FAA response:

As previously mentioned, AC No. 20–131 was published on October 3, 1988. It proposes acceptable certification criteria. The TCAS II system must be certified to the essential level, and the software programs to level 2 of RTCA DO-178A.

Comment:

Certification requirements for compliance with foreign regulatory agency requirements for TCAS deactivation are unknown.

FAA Response:

There is a possibility that a foreign government may request a U.S. TCAS-equipped airplane to deactivate the TCAS system, which is provided for in the TCAS equipment standards. Section 91.1 of the FAR's provides for compliance with the foreign government regulatory requirements.

Comment:

Certification requirements for U.S. carriers with airplanes dedicated to service abroad, such as Pan Am, are unknown.

FAA response:

Public Law 100-223 requires installation "on each civil aircraft which has a maximum passenger capacity of more than 30 seats and which is used to provide air transportation of passengers . . ." An air carrier operator who experiences hardship due to this regulation may petition for an exemption under section 601 of the FA Act of 1958.

Comment:

The means of providing integrated TA's and RA's on older airplanes without color weather radar displays has not been economically addressed.

FAA response:

The FAA minimum requirements specified in the TSO will require only a minimum of a three-target display. Any display beyond this minimum will be evaluated at the time of certification.

Comment:

Required crew response to TA's and RA's should be specified. For TCAS to be effective, a standard mandatory response is necessary.

FAA response:

The FAA does not believe that a mandatory response to TA's or RA's is necessary or appropriate. The AC for TCAS II certification and operation [AC No. 20-131; October 3, 1988] addresses crew training objectives.

Mode C

Five commenters addressed the issue of using Mode C. Generally, the respondents expressed the opinion that Part 125 aircraft should be allowed to use Mode C as an alternative to the TCAS II system, as the TCAS equipment costs would be prohibitive for such a class of operator. As previously mentioned, if the Part 125 operator's aircraft is configured for 30 passenger seats or less, then that aircraft is exempt from the TCAS requirement.

ICAO/Part 129 Foreign Carriers

The majority of comments mentioning ICAO (15) suggest that the FAA should coordinate TCAS implementation with Standards and Recommended Practices (SARPS) for international standardization. A standard for an ACAS generated by ICAO is especially important to foreign carriers. The FAA is actively participating with various ICAO technical groups through SICASP in an effort to generate this standard. The SICASP group will have been provided all FAA data concerning TCAS.

Of the comments addressing only the issue of TCAS implementation in Part 129 aircraft, two are against, two are for, and three request additional time to comply. Public Law 100-223 did not exempt foreign air carrier operations, within U.S. airspace, from TCAS II requirements. The Congressional finding states that public health and safety requirements necessitate the timely completion and installation of a collision avoidance system for use by commercial aircraft flying in the United States. However, the FAA is extending the compliance time from 5 to 6 years for airplanes with 10 to 30 seats. These operators may elect to install TCAS I, II, or III. If they install a TCAS II or III unit, it must be compatible with TSO C-119.

Foreign air carrier aircraft with more than 30 passenger seats will be required to have installed and operating a TCAS II system, compatible with TSO C-119, when operating in the United States after December 30, 1991.

Upgrade TCAS II to TCAS III

In responding to the issue of upgrading TCAS II to TCAS III, most comments addressed the need for clarification. The respondents stated that the implied requirement for upgrading was questionable and should be more definitive. The upgrading has the support of one manufacturer, and another is supportive of the idea to require that TCAS III include the same operational criteria that will be used for TCAS II. One manufacturer stated that the "incentive to provide TCAS III growth is too vague to justify economic commitments."

Although the FAA has not required or proposed a compliance date for TCAS III, it will continue to develop, test, and evaluate TCAS III and provide data and technical support to RTCA for development of a TCAS III MOPS. Although the FAA may support a particular design for testing, it is more important that it fosters the development of the MOPS. The FAA continues to support a LIP for TCAS III.

Other than the air-to-air coordination logic, the manufacturer has freedom of design of the TCAS systems. The FAA agrees with the commenter who expressed concerns regarding the interoperability of TCAS II and III. The TCAS II design shall not preclude the upgradeability to, nor the interoperability of, TCAS II and III. This rule does not mandate a TCAS III system. New rulemaking would have to be initiated for the requirement of TCAS III.

Training

Eight commenters were evenly divided concerning the need for standardized training prior to TCAS II implementation. Those who favor training requirements want training to focus on end-level performance, and do not believe that a specific technique is important. Training should focus also on difficulties involving the upgrade from TCAS II to TCAS III. The FAA intended the training requirements proposed in the NPRM to be training objectives, and the training program may not necessarily be limited to the proposed items. The training items, as proposed, appear in AC No. 20-131 dated October 3, 1988. The AC prescribes a means, but not the only means, of complying with the regulatory requirements.

Advisory Circular

Five commenters addressed the need to publish AC's regarding the TCAS system. Domestic industries that responded to this issue requested that such a circular be published 24 months in advance of the rule adoption. The FAA published AC No. 20-131 on October 3, 1988, to provide guidance for the installation and operational approval of TCAS III.

Product Liability

Several commenters, some foreign, addressed the issue of product liability. The commenters suggested that, as a result of the FAA's requirement to install a system designed and developed by the FAA, the Government will be subject to product liability claims for use of TCAS equipment. Some commenters further requested that the FAA voluntarily indemnify the regulated operators from such liability.

The FAA considers the TCAS requirement similar to other operating requirements involving the use of certain equipment, and the agency does not consider it necessary or beneficial to make any special provision for liability claims against the Government or regulated operators.

Applicability

Thirty-six commenters addressed this issue. Four of the comments were sent by private individuals, nine were sent by foreign agencies, and the remainder were submitted by domestic (U.S.) industries. The primary concern expressed was that TCAS I should be required for Part 135 operators, but not TCAS II. Many commenters expressed the opinion that there is no justification for the use of the TCAS system over other collision avoidance systems. As previously stated, the FAA relaxed the TCAS requirement and compliance times proposed in the NPRM for Part 135 operators. Additionally, the FAA will evaluate passive/active TCAS I systems.

Foreign operators stated that it was necessary to continue to allow ATCRBS to be used, due to the cost of installing and operating Mode S, and that the installation of the TCAS system should be limited to new U.S.-registered aircraft. Many comments addressed the need for uniform installation of the TCAS system, and a few respondents expressed the opinion that Mode C should be mandatory in all aircraft.

The FAA addressed the Mode C requirement in another rulemaking action, "Transponder with Automatic Altitude Reporting Capability Requirement," Amendment No. 91-203 (53 FR 23356; June 21, 1988). Mode S is a necessary component of TCAS II. The Mode S air-to-air data link provides TCAS II with the coordination procedures necessary for the proper RA in a TCAS to TCAS conflict. The TCAS I does not require a Mode S transponder to be installed.

The introduction of TCAS I and II is expected to reduce substantially the threat of midair collision. To equip only new U.S.-registered aircraft would be inconsistent with the requirements of Pub. L. 100-223 and would delay the benefits of a TCAS program. A high degree of protection can be realized for those operators with the expanded requirement for Mode C in general aviation aircraft and TCAS II in air carrier aircraft. Concerns were raised about the size, weight, and interfacing of the new equipment, and some comments cited the need to test representative equipment to assess its service acceptability. Some commenters stated that the display of aircraft was an essential component in the Minimum Equipment List (MEL). The FAA promulgates minimum standards and evaluates manufacturers' designs to those standards. Size, weight, and interface are market place decisions. Service acceptability will be assessed in that the system is compatible with other TCAS designs with respect to coordination logic and human factor considerations. The FAA evaluates the display systems for minimum requirements and functional compatibility during the certification evaluation in the aircraft.

Nine commenters expressed concerns relative to Part 125 aircraft. Four of these respondents stated that Part 125 aircraft should be exempt from the rule or be allowed to maintain the existing ATCRBS system requirements. The Congressional mandate covers all commercial aircraft with passenger seating configuration of more than 30 seats. With respect to aircraft with 30 seats or less, the FAA agrees with the comments. Under the rule adopted, those aircraft operating under the provisions of Part 125 in nonrevenue passenger service, with passenger seat configuration of 30 seats or less, will not to be required to have a TCAS system installed.

Include All Aviation

Fifteen commenters stated that the only way to ensure maximum effectiveness of the proposed TCAS system is to extend the requirement to include Part 125, Part 129, Part 135, and military aviation aircraft. The final rule does include aircraft operating under these parts to varying degrees, but it does not apply to military aircraft. However, the U.S. Navy is studying the feasibility of using TCAS I on military trainers, and the FAA is cooperating with the Navy to pursue certification of a passive/active system for the Navy T-34C trainer aircraft.

One commuter questioned whether the rule is to apply to air cargo carriers. The Part 121 rule specifically addresses aircraft with passenger configuration of more than 30 seats. However, if there is a split cargo/passenger aircraft with more than 30 seats, the airplane must have a TCAS II installed; 10 to 30 seats, the airplane must have at least a TCAS I installed. However, the FAA will not require installation of a TCAS on a large combination cargo/passenger airplane simply because of the capability for increasing passenger capacity, if the aircraft is not operated with 10 or more passenger seats.

One commenter suggested issuing a supplemental NPRM that airworthiness regulations be amended to require TCAS and to adjust the requirement of Section 25.1309 to recognize the value of TCAS in reducing overall risk. The FAA does not believe this is necessary in that all Part 25 aircraft are not required to have TCAS II installed according to the operating rules.

FAA Responsibility

Several comments received expressed a desire that configuration of the Collision Avoidance System (CAS) software be the responsibility of the FAA. The FAA does control the configuration of the CAS logic software by requirements in the TSO and subsequent installation approval. To change the software of the CAS logic would require the TSO holder to apply to the FAA for approval of a major change to the original approved design data. Deviations (major changes) to TSO's are only approved by the Aircraft Engineering Division of the Office of Airworthiness in Washington, D.C.

Pilot Immunity for TCAS

There are several commenters who desire the FAA to grant blanket immunity to pilots for following or failing to follow an RA from the TCAS. The FAA cannot support this proposal from the industry for the following reasons:

(a) The pilot will always be ultimately responsible for his/her actions and must be held accountable for them. In the case of TCAS, there is no doubt that there may be instances where the pilot will be "off-altitude" in response to a TCAS-generated RA, and may indeed be involved in a near midair collision or an actual collision. During the review process of the incident, as in all incidents, all factors will be considered, including the factors that are TCAS related, and a determination made. This is the only position that the FAA can take on this matter and it must be made clear to all operators of TCAS.

(b) The FAA has never granted blanket immunity to flightcrews for any operation regardless of the criticality of that operation. There is no legal precedent for granting such broad relief from responsibility. Section 91.3 of the FAR states, "The pilot in command of an aircraft is directly responsible for, and is the final authority as to, the operation of that aircraft." Introducing TCAS into the National Airspace System does nothing to change this regulation.

Every consideration will be given to the flightcrew in the review process for TCAS-related incidents. All factors will be thoroughly reviewed and determination made as to responsibility.

Aviation Trust Fund

One commenter expressed the opinion that the FAA would be well advised to use the Aviation Trust Fund to upgrade and improve the existing ATC system. This comment is outside the scope of this NPRM.

Economic Considerations

Of the 32 comments received mentioning economic considerations, only two respondents, both elected government representatives, were of the opinion that the cost involved is minimal. Most commented that the economic impact is not adequately addressed. Specific concerns voiced include those from small operators who believe they will be forced out of business, and large airlines who believe that the upgrade from TCAS II to TCAS III will be costly. As previously mentioned, the FAA relaxed the time for compliance for airplanes having a seating capacity of 10 to 30 passenger seats. This change will definitely reduce the economic impact on small operators. Four commenters proposed less costly alternate systems to TCAS.

In the NPRM the FAA agreed to consider passive versus active TCAS I systems as long as the applicant can demonstrate that the passive system provides the equivalent level of safety as active TCAS I. To date, the FAA has received no valid data to show that a passive TCAS I can meet the safety intent of the rule, so this final action assumes an active TCAS I. If passive TCAS I can be demonstrated to meet the rule, then the FAA would be amenable to follow-on regulatory action to allow its use.

The FAA does not expect to mandate TCAS III at this time. The economic considerations for TCAS II are discussed in the regulatory impact analysis summary.

Other Comments Not Previously Addressed

One manufacturer suggested new standards for automatic altitude reporting be required similar to an ATA petition dated March 25, 1986. Although the FAA would have to agree that reduced altitude error does increase the accuracy of the projected flight path of the intruder aircraft during TCAS tracking, the safety analysis done on the current altitude encoder errors would conclude safe TCAS operation.

One commenter was concerned that there was no data on the performance characteristics of TCAS 11 in high wing with engines mounted on the wing. The FAA does not have any information or data that indicates there will be any adverse effect of TCAS operation on these aircraft. However, the FAA will conduct in-service evaluations in such aircraft to obtain system performance and aircraft performance information.

One commenter, James Pope, was critical of the FAA's TCAS program and supported an ACAS unit not dependent on radar transponders. Pope alleged that 770 lives have been lost in ACAS-preventable midair collisions during the development of TCAS. This commenter asserts that NPRM 87-8 must be promptly withdrawn and immediate action taken by FAA to certify the proven and ready-to-go ACAS.

This commenter has previously made these same allegations to the FAA which were subsequently investigated on two occasions by the General Accounting Office and found to be without basis. The

FAA believes that it has previously provided detailed answers to the commenter's allegations, and does not believe it is necessary to give an indepth analysis here. Anyone wishing a copy of the investigative reports can contact the person identified under the section, "For Further Information Contact."

Discussion of Rule

The FAA currently operates a complex network of facilities and subsystems designed to ensure the safe and efficient operation of the National Airspace System (NAS). Operations within the NAS and its many components are governed by an array of Federal Aviation Regulations (FAR) and procedures. Consequently, a wide variety of facilities and services are available. Nevertheless, the primary function of separating aircraft is predicated on the fundamental concepts of ground-based control and the see-and-avoid responsibility of the flightcrew.

Under the see-and-avoid concept, the level of safety is related to the ability of pilots, individually and collectively, to detect and avoid encounters with other aircraft. Although common sense and the FAR require continuous adherence to the principles of see-and-avoid, the concept does have limitations. The pilot's ability to acquire aircraft visually on collision courses is reduced under heavy workload conditions, in areas of high traffic densities, and when the aircraft is in conditions of poor visibility.

The second fundamental concept upon which the separation of aircraft is predicated is ground-based control. Through the issuance of instructions, clearances, and advisories, air traffic controllers ensure that prescribed separation standards are applied between aircraft. Since these instructions are based on known and projected flight information, this system does not rely totally on the pilot's ability to acquire traffic visually to achieve acceptable levels of safety. In some segments of the NAS, such as terminal control areas, positive control is exercised, and operations in such airspace are conducted under ATC instructions. A terminal radar service area is an example of upgrading of the see-and-avoid concept and represents a complex control environment, since both controlled and uncontrolled aircraft are operating in the area. The overall collision avoidance system design must address the unique problems of such a mixed traffic environment.

The FAA's approach to TCAS is to encourage the development of a family of onboard collision avoidance systems, to demonstrate the operational and technical feasibility of the concept, and to support the development of national/international standards for the equipment. A principal objective of the TCAS approach is to provide a range of collision avoidance equipment alternatives for the full spectrum of airspace users ranging from small airplanes to large transport category airplane. The TCAS Program consists of the following three program elements: TCAS I, which provides only TA's; TCAS II, which provides TA's and RA's in the vertical plane only; and TCAS III, which provides TA's and RA's in both the vertical and the horizontal planes.

On December 30, 1987, the President of the United States signed Pub. L. 100-223 which, among other provisions, amended the FA Act of 1958, Section 601, by adding a new paragraph (f) entitled "Collision Avoidance Systems." This new section requires TCAS II on "each civil aircraft which has a maximum passenger capacity of more than 30 seats and which is used to provide air transportation of passengers, including intrastate air transportation of passengers." The amendment does not provide for the exception of any class of civil operation or operator, U.S. or foreign, from the basic rule.

The rule adopted provides for the installation of appropriate TCAS units on airplanes used in commercial air carrier, selected air taxi/commuter operations, and on airplanes used by foreign carriers flying in the U.S. airspace. The categories of commercial aircraft for which TCAS I or II will be required are based on the provisions of P.L. 100-223 and on the relative speed of the aircraft, the size of the aircraft, and the number of passengers per aircraft who would benefit from TCAS installation.

Aircraft operating exclusively under Part 91, General Operating and Flight Rules, are not required to have installed any TCAS equipment. However, if an operator or owner elects to install a TCAS unit, the system must be FAA approved and operated according to FAA prescribed procedures. The TCAS system installed must be shown to operate in the ATC system and in coordination with other FAA approved active TCAS systems.

Part 135 commuter and air taxi operators of turbine powered airplanes with 10 to 30 passenger seats will be required to install a TCAS I system to provide TA's from other transponder-equipped aircraft. These advisories should give bearing and distance from the TCAS-equipped airplane in the case where the other aircraft have only a Mode A transponder (no altitude reporting). If the intruder aircraft is Mode C- or Mode S-equipped, the TCAS I unit should also display altitude, which provides the pilot a sector both in the vertical as well as the horizontal plane to look for the threat aircraft. TCAS I, although not providing an RA, does provide sufficient alerting time for the pilot to visually acquire the threat aircraft and take evasive action if necessary. Although the RTCA MOPS has been approved for TCAS I, no system has been built to date. The FAA believes that development of collision avoidance equipment that can meet the TCAS I MOPS is well within the state of the art for equipment manufacturers and that adequate quantities to supply the commuter/air taxi fleet can be manufactured and installed during the time period prescribed.

Part 135 operators of 10 to 30 passenger seat turbine powered airplanes are required to have installed a TCAS I within 6 years after the effective date of the rule. Installation of TCAS I does not require the installation of a Mode S transponder.

Part 121 and 125 operators of large airplanes of more than 30 seats are required to have TCAS II and Mode S installed and operating by December 30, 1991. These operators may wish to upgrade to TCAS III units when they become available. Much research is necessary to develop TCAS III to the point that it can be type certificated. The ability to produce operatonal TCAS III units is many years away.

Part 129 foreign air carrier operators of turbine powered airplanes with passenger seating configurations of 10 to 30 are required to have installed and operating a TCAS I when operating in U.S. airspace 6 years after the effective date of this rule. Foreign air carrier operators of airplanes with more than 30 passenger seats are required to have installed and operating a TCAS II and Mode S transponder when operating in U.S. airspace after December 30, 1991. The FAA believes that this final rule will encourage affected foreign airplane operators, and their airworthiness authorities, to become familiar with the associated TSO's and RTCA documents that form the basis of approval and manufacture of a TCAS approved by the FAA. The TCAS systems approved by foreign airworthiness authorities must be compatible with and perform with the FAA-approved TCAS, transponders, and ATC system when operating in United States airspace.

Where the rules require a TCAS I or II unit, the intended minimum TCAS units are those complying with the requirements of TSO C-118 and TSO C-119 as appropriate, with the exception of Part 129 foreign air carrier operators. Where the rule specifies an approved TCAS, the installer may elect TCAS I, II, or III. Where the rule requires a TCAS II, the installer may elect TCAS II or III. There is no requirement, at this time, for the installation of a TCAS III system. The TCAS III system is being developed to enhance the basic TCAS II system by providing a more accurate surveillance capability and alternative escape maneuver selection in the horizontal plane. The FAA can envision that some operators may want to update their TCAS II units to TCAS III when available. The required TCAS III system design as will be defined in the applicable TSO and MOPS will permit the upgrading of a TCAS II unit to a TCAS III. In the applicable standards for TCAS II, whenever a choice exists between TCAS II and TCAS III elements (i.e., antenna, etc.), the TCAS III element will be specified in the TSO and MOPS. The FAA is committed to support the development of TCAS III. Any rulemaking concerning mandatory use of TCAS III will be handled separately from this rulemaking.

Flight Manual Requirements and Operational Approval

Where the rule requires TCAS to be used in air carrier service, operational approval must be obtained from the FAA at the time that certification (TC or STC) application is made. The applicant must submit for approval flight crew qualification, training program, and TCAS inoperative items to be included in the appropriate Master Minimum Equipment List.

Technical Standard Order

The RTCA Special Committee SC-147 has developed RTCA Document DO-197, Minimum Operational Performance Standards (MOPS) for An Active Traffic Alert and Collision Avoidance System I (Active TCAS I). This document forms the basis of a TSO that will permit the active TCAS I to be manufactured under the TSO approval system.

The RTCA Document DO-185, Volume I and II, Changes 1 thru 5, *Minimum Operational Performance Standards for Traffic Alert and Collision Avoidance System (TCAS) Airborne Equipment* and FAA Report No. DOT/FAA/SA-88/3, *Required Modifications to the Traffic Alert and Collision Avoidance System (TCAS II) Minimum Operatinonal Performance Standards (MOPS)* set forth standards for TCAS II equipment. These documents will also form the basis of a TSO to permit manufacturing under the TSO approval system. The TCAS III MOPS will be a new RTCA document separate from DO-185 but will identify a system functionally compatible and interchangeable with TCAS II. The three TCAS systems I, II, and III will be identified under the TSO system by different TSO numbers. Concurrent with the publication of this rule, the FAA is publishing TCAS I and TCAS II TSO's defining the minimum standards for such units.

While FAA research, to date, has focused on an active TCAS I, it has been suggested by some people that a passive (listen only) device may be able to meet the same objective intended by the active TCAS I units. While this regulatory action on a TCAS I TSO presupposes an active TCAS I, the FAA wishes to go on record as not being opposed to a passive TCAS I, as long as it meets the same safety objectives of DO-197.

TCAS Training Requirements

The introduction of TCAS into revenue service need have little impact on the existing regulations regarding required crew training, and therefore should not require a change to the existing training requirements. As specified in § 121.401, a Part 121 certificate holder is required to establish, obtain the appropriate initial and final approval of, and provide a training program that meets the requirements of Part 121, Subpart N, and insure that each crewmember is adequately trained to perform his/her assigned duties. Section 121.401 will have the effect of requiring training on TCAS. Section 121.415(g) requires that each crewmember qualify in any new equipment, including modifications to airplanes. Section 121.407(a)(3) requires that each airplane simulator and other training device be modified to conform with any modification to the airplane being simulated.

The pilot training program for TCAS should provide the flightcrew the necessary knowledge, skills, and abilities to safely conduct TCAS operations.

Regulatory Impact Analysis Summary

Introduction

This section summarizes the cost impact and benefit assessment of the final rule to amend Parts 1, 91, 121, 125, 129, and 135 of the Federal Aviation Regulations (FAR) to require the installation and use of a Traffic Alert and Collision Avoidance Systems (TCAS) in large transport airplanes and certain turbine-powered smaller airplanes. TCAS II, which utilizes a signal from existing transponders equipped with altitude encoding capability, provides collision avoidance guidance in the airplane independent of the ground Air Traffic Control (ATC) system. These amendments also require that all operators of TCAS-equipped airplanes have an FAA-approved training program for flight crewmembers. Finally, this rule requires that certain small aircraft be equipped with TCAS I, a simpler system providing collision alert warning but no flight guidance. The amendments are in response to legislation that mandates the FAA to require the installation and operation of TCAS in certain commercial airplanes flying in the United States.

These amendments stem from a Notice of Proposed Rulemaking (NPRM) published in the Federal Register on August 26, 1987. Comments on the proposal were submitted by individuals, foreign and domestic air carriers, air carrier and airline pilot associations, foreign and domestic Government agencies, research and consultant organizations, avionics manufacturers, and the National Transportation Safety Board. Approximately half of the 70 respondents expressed support of the proposed rule to require TCAS. The remaining respondents, however, opposed certain proposed requirements and disagreed with the economic impact estimates presented in the preliminary regulatory analysis. The FAA has evaluated the public comments and made a final determination regarding their impact. The comments have caused the FAA to revise its estimates of economic impacts and increase compliance costs. The final rule amendments to Parts 121, 125, and 129 require that after December 30, 1991, no person may operate a large airplane that has a passenger seating configuration, excluding any pilot seat, of more than 30 seats unless it is equipped with an approved TCAS II and the appropriate class of Mode S transponder.

A substantial change in the final rule is the elimination of the requirement contained in the notice that airplanes operated under 14 CFR Parts 125, 129, and 135 having a passenger seating configuration of 20 to 30 seats be equipped with TCAS II. The final rule, therefore, requires that turbine-powered airplanes operated under Parts 129 and 135 having a passenger seating configuration of 10 to 30 seats, excluding pilot seats, be equipped with TCAS I under a longer than normal compliance period.

Cost-Benefit Analysis

Executive Order 12291 of February 17, 1981, requires that to the extent permitted by law, regulatory action not be taken unless the potential benefits to society for the regulation outweigh potential societal costs. This determination is normally made on the basis of a regulatory evaluation. In this case, however, the Congress may be said to have already determined that this final rule is in the public interest; that is, its collective public benefits outweigh its costs to the public, because Congress has required the rule be promulgated (The Airport and Airway Safety and Capacity Expansion Act of 1987: Public Law 100-223). Nevertheless, the FAA has prepared this conventional regulatory evaluation of the rule. The purpose of this evaluation is not to justify taking this rulemaking action (which has already been done through congressional action), but to estimate dollar costs and benifits to promote understanding of the impact of the rule.

Costs

The FAA finds that the revisions to Parts 1 and 91 will have no cost impact. The amendments, however, to Parts 121, 125, 129, and 135 will cause affected certificate holders to incur costs.

The FAA recognizes that there will be costs associated with the amendments to Part 129. These costs are likely to be similar to those incurred by affected Parts 121 and 135 certificate holders, but have not been quantified because the burden of compliance will not be directly borne by any sector of U.S. society.

The methods and assumptions used in this analysis to prepare the final cost and benefit estimates for the revisions to Parts 121, 125, and 135 have been developed by the FAA. Data used to develop cost estimates at the NPRM stage of rulemaking were obtained from manufacturers, air carriers, avionics repair facilities, and industry trade associations. The FAA has updated this information and conducted additional research to respond to the comments concerning the economic impact estimates of various proposals. The information obtained has been used to formulate the final cost estimates of the rule. The cost and benefits calculated for the final rule are projected over the estimated 15-year life cycle of TCAS equipment. Therefore, this analysis compares the costs and benefits of TCAS II equipment for Parts 121 and 125 over a 15-year period of 1989 to 2003. To allow sufficient time for the development and certification, this rule does not require the use of TCAS I until 1996. Accordingly, to reflect the longer than normal compliance period, the analysis for Part 135 has been extended over the 15-year period of 1993 to 2007.

New § 121.356 will have an economic impact on the 3,365 existing airplanes expected to be in service in 1989 and 3,100 airplanes expected to be manufactured between 1989 and 2003 because these airplanes will be required to be equipped with a TCAS II system. The estimated cost of this requirement is $806.3 million in 1987 dollars and $543.0 million at a present worth discount rate of 10 percent over the 15-year period of 1989 to 2003.

The amendments to Part 121 will also require that air carriers develop and implement an FAA-approved TCAS II training program for their captains and first officers. The training program will require that air carriers install approved TCAS II aerodynamic data programs in their flight simulators and provide an additional one and a half hours of classroom instruction during initial training for their existing and newly-hired flightcrews. As part of the classroom instruction, certificate holders will be required to use a real time interactive device to complete transfer of system knowledge from the classroom to the cockpit. The estimated cost of modifying the 150 flight simulators currently in use by Part 121 certificate holders is $2.2 million in 1987 dollars and $2.0 million discounted at a present worth rate of 10 percent in the first year the rule is in effect. The cost of acquiring the small computers to be used as interactive training devices to transfer and reinforce classroom instruction is estimated to be $462 thousand in 1987 and $420 thousand discounted the first year the rule is in effect.

The estimated cost of requiring captains and first officers of the 149 affected Part 121 certificate holders to undergo additional classroom training is $24.5 million and $13.7 million discounted over the projected time period. Finally, the onetime cost of developing an FAA-approved TCAS II training program is estimated to be $3.7 million in 1987 dollars and $3.4 million discounted at a rate of 10 percent in the first year the rule is in effect. This analysis indicates that the total cost of compliance to Part 121 certificate holders with the equipment acquisition installation, maintenance, and flight crewmember training requirements contained in this rule is estimated to have a present value of $562.5 million over the 15-year period of 1989 to 2003.

The addition of § 125.224 will require that airplanes with a passenger seating configuration, excluding any pilot seats, of more than 30 seats be equipped with TCAS II. The estimated cost of equipping the 22 airplanes now operating under the rule of Part 125 is $2.5 million in 1987 dollars and $2.3 over the 15-year period of 1989 to 2003.

The amendments to Part 135 will require that all turbine powered airplanes with 10 to 30 passenger seats be equipped with TCAS I. In addition, the rule will require that all operators of TCAS I equipped airplanes have an FAA-approved TCAS I training program for flight crewmembers.

The estimated cost of equipping 2,772 airplanes with TCAS I units is $34.1 million in 1987 dollars and $14.7 million discounted over the 15-year projected service life of the equipment of 1994 to 2008. The estimated cost of requiring the flightcrews of affected air taxi and commuter operators to undergo additional classroom training during the initial phase of flight training is $1.3 million in 1987 dollars and $0.7 million at a 10 percent present worth rate. Finally, affected Part 135 operators required to have an FAA-approved training program will incur a one-time cost estimated to be $1.0 million in 1987 dollars and $.9 million discounted at 10 percent the first year the rules is in effect. On the basis of the above, the aggregate impact of these amendments on affected air taxi and commuters is $36.5 million in 1987 dollars and $16 million when discounted at 10 percent over the 15-year period of 1993 to 2007.

Benefits

The TCAS rule is expected to provide potential benefits primarily in the form of improved safety to the aviation community and flying public. Such safety, for example, will take the form of reduced casualty losses (namely, fatalities and property damages) as the result of a lowered likelihood of midair collisions.

In general terms, the benefits of an effective airborne traffic alert and collision avoidance system in reducing the risk of midair collisions system in reducing the risk of midair collisions have been obvious for many years. As air traffic continues to increase and concentrate at terminal areas, the growing consensus of both the general public and most aviation professionals is that such a system would be a valuable safety addition. In 1987, congress determined that requiring TCAS II in most large aircraft is in the public interest. Although experienced airspace system operators also agree that the system would be beneficial, accurately quantifying benefits is difficult because (fortunately) there have been few actual Part 121 midair collisions in recent years. At the time of the notice, the FAA developed a mathematical model to assess the increase in collision risk that would result from the projected growth in aviation traffic activity. The FAA used a "square law model" to forecast that four midair collisions involving a large airplane and 24 midair collisions of taxi and commuter airplanes would occur if no additional safety measures were taken to offset the affects of traffic growth. Since that time, the FAA has analyzed the issue further, and has concluded that although the "square law model" is simple to apply and yields specific results, the air traffic control system is too complex for the model to be expected to provide reasonably accurate results. For this reason, the FAA has changed the basis of its benefits analysis for the final rule. The fact is, that given the very few midair collisions involving large aircraft that have occurred in recent years, and given the air traffic control improvements that have occurred and will occur shortly (such as new Mode C requirements), it is not possible to reasonably forecast specific numbers of future midair collisions. Also, the FAA is unable to allocate specific numbers of future midair collisions that will be avoided in the future between the new Mode C requirements and this TCAS rule. Instead of attempting to do this, the FAA has chosen to estimate a range of midair collisions that may occur. Currently, the stage is set for a midair collision only when one or both pilots of two aircraft make a mistake *and* the ATC system fails *and* TCAS fails. In the enroute system, TCAS plays a somewhat stronger role where ATC radar coverage does not exist.

The above factors tend to reduce the number of future midair collisions. On the other hand, steadily increasing traffic levels tend to increase the risk. In an attempt to estimate the range of midair collisions within which the actual number of future midair collisions of large aircraft will fall, the FAA employed a Poisson distribution. Based on a history of two collisions in the recent past, the Poisson distribution indicates that there is a 60 percent probability two or more collisions in the future forecast period, and a 95 percent probability that the number will not exceed seven. The FAA believes that the range of two to seven is a reasonable expectation of the number of midair collisions involving a large aircraft during the next 15 years. In monetary terms, over the subject time period, this rule is expected to accrue potential benefits ranging between $207 million and $724 million (discounted, in 1987 dollars).

A similar analysis of the number of Part 135 midair collisions that may be avoided through TCAS I yields a range of 4 to 14 during the 15-year analysis period. Based on the moderate cost of TCAS I, this part of the rule is cost-beneficial throughout the range of potential midair collisions avoided. For example, in monetary terms, over the subject time period, this rule is expected to accrue potential benefits ranging between $27 million and $97 million (discounted, in 1987 dollars), compared to costs of $18 million (which included $2 million for the Mode C rule).

In view of the aforementioned discussion on benefits for Parts 121 (including Part 125) and 135, the FAA believes that a share of the potential benefits expected to accrue from implementation of this rule must be attributed to the Mode C rule, though to what extent is not known. This situation is due to the belief that the benefits of the TCAS and Mode C rules are inextricably linked.

Comparison of Parts 121 and 135 Costs and Benefits

Addressing only 14 CFR Parts 121 and 135 costs and benefits of this TCAS rule, the cost of compliance is estimated to be $563 million and $18 million, respectively (discounted) in 1987 dollars. The benefits of this rule, however, are difficult to quantify for two reasons. The first is associated with the uncertainty of estimating the number of midair collisions that will occur in the future absent any improvements in the airspace system over and above what currently exists. This difficulty has already been discussed at length in the detailed regulatory evaluation and the FAA has chosen to consider ranges of 2 to 7 and 4 to 14 collisions involving Parts 121 and 135 operators, respectively, may occur in the forecast period.

The second reason benefits are difficult to forecast accurately is that at about the same time this rule becomes effective a separate rule will become effective expanding Mode C requirements. Both rules are aimed at reducing the risk of midair collisions and are inextricably linked. The FAA is unable at this time to document the separate impacts of these two rules in reducing the risk.

The FAA made an earlier estimate of the dollar value benefits associated with avoiding future midair collisions as part of its evaluation of the Mode C rule. That estimate was significantly lower than the updated estimate prepared for this rule. The difference is only partly explained by the fact that the Mode C rule estimate was for a 10-year period while the estimate for this rule covers a 15-year period into the future (to allow for the relatively long periods before compliance is required).

Both evaluations used a Poisson distribution model as a basis to estimate the number of future midair collisions that might be expected in the absence of any further airspace system improvements to prevent them. In the Mode C analysis, the FAA very conservatively accepted the low side of the distribution (two accidents) in calculating benefits. However, based on the belief that U.S. commercial aircraft operations are forecast to more than double during the analysis period, the FAA now believes that a better approach is to analyze a range of values.

In view of the difficulties discussed above, the FAA believes that the most realistic approach to comparing benefits and costs is to compare the total Part 121 costs of the TCAS rule plus the

Mode C rule with the full estimated range of possible Part 121 benefits. In a similar manner, total Part 135 TCAS rule plus Mode C rule are compared to the total range of Part 135 benefits.

In the case of Part 121 operator, the cost of the Mode C rule is negligible because virtually all Part 121 aircraft are already in compliance with the rule. Table 1 shows the cost of saving one life through the range of estimated Part 121 midair collisions. As indicated in the table, these cost-per-life-saved figures are based on an estimated total Part 121 TCAS cost of $563 million and no attempt was made to allocate some benefits to the Mode C rule. (A similar exercise can be performed for Part 135 from Table 1.)

TABLE 1

Estimated TCAS II (Part 121) and TCAS I (Part 135) Cost of Saving Lives

(1987 Dollars)

Range of potential midair collisions		Estimated discounted benefits (TCAS plus Mode C rules) ($ millions)		Estimated cost of saving one life in ($ thousands)	
Part 121	Part 135	Part 121	Part 135	Part 121	Part 135
7	14	$724	$97	$ 710	$ 0
6	12	621	83	880	20
5	10	517	69	1,120	70
4	8	414	55	1,480	120
3	6	310	42	2,080	290
2	4	207	27	3,280	550
1	2	103	14	6,830	1,360

The FAA concludes that this TCAS rule is warranted because it will contribute to an overall enhancement of transport and commuter categories airplane safety and utility which will both promote and enhance public confidence in, and utilization of, the U.S. air transportation system. Although the FAA has not yet quantified the value of public confidence in air transportation, it believes there is a very real cost to the system when public confidence is reduced through media coverage of each major midair collision tragedy. The fragility of public confidence is difficult to quantify, but the potential benefits in this regard stemming from avoidance of a major midair collision is very real and substantial. For example, the near-to-midair term loss of passenger bookings following the publicity of a midair collision is readily acknowledged within the industry. Even a special Government safety review of a particular air carrier can have a temporary adverse impact on yields. The qualitative nature of this consideration does not render it less significant as a factor in determining to proceed with the TCAS rulemaking action.

The Regulatory Impact Analysis that has been placed in the docket contains detailed information related to the potential costs and benefits of those amendments to Parts 121, 125, and 135 that are expected to accrue from implementation of this rule.

Regulatory Flexibility Determination

The Regulatory Flexibility Act of 1980 requires a review of rules to assess their impact on small business. In consideration of the cost information discussion under the Regulatory Impact Analysis, the FAA concludes that these amendments to Parts 121, 125, and 135 will have a significant economic impact on a substantial number of small entities. However, the FAA finds that there are no viable alternatives for small air carriers to adopt that will reduce the cost of compliance yet achieve the levels of protection sought by these amendments. It can be pointed out, however, that the majority of small entities affected by this rule are Part 135 operators (small air taxis and small commuters). These small businesses will have 6 years to comply with this rule (as opposed to 3 years for Parts 121 and 125 operators). The average total cost impact of this rule on a small air taxi operator or small commuter for TCAS I units is estimated at $36,000 (or $4,700 annualized) and $76,000 (or $10,000 annualized), respectively, over the 15-year period 1989 to 2003. For Parts 121 and 125 operators, the average total cost for TCAS II units is estimated to be $734,000 (or $96,000 annualized) over the 15-year period.

International Trade Impact Statement

These amendments will have little or no impact on trade opportunities of U.S. firms doing business overseas or for foreign firms doing business in the United States. These rules will impose the same requirements on both domestic operators under Parts 121, 125, and 135 of the FAR and foreign air carriers subject to Part 129. The cost of compliance with these rule amendments to foreign carriers flying into the United States under Part 129 is likely to be very similar to the cost incurred by domestic operators. Thus, neither domestic nor foreign air carriers will be affected disproportionately by these amendments. These rules, therefore, will not cause a competitive fare disadvantage for U.S. carriers operating overseas or for foreign carriers operating in the United States.

Federalism Implications

The regulations adopted herein would not have substantial direct effects on the states, on the relationship between the national government and the states, or on the distribution of power and responsibilities among the various levels of government. Thus, in accordance with Executive Order 12612, it is determined that such regulations do not have federalism implications warranting the preparation of a Federalism Assessment.

Conclusion

For the reasons discussed in the preamble, and based on the findings in the Regulatory Flexibility Determination, and the International Trade Impact Analysis, the FAA has determined that this rule is a major rule under Executive Order 12291. In addition, in consideration of the cost information discussion under the Regulatory Impact Analysis, the amendments to Parts 121, 125, and 135 will have a significant economic impact on a substantial number of small entities. This rule is considered significant under DOT Regulatory Policies and Procedures (44 FR 11034; February 26, 1979). A regulatory impact analysis of this final rule, including a Regulatory Flexibility Determination and International Trade Impact Analysis, has been placed in the docket. A copy may be obtained by contacting the person identified under "FOR FURTHER INFORMATION CONTACT."

The Amendments

In consideration of the foregoing, the Federal Aviation Administration amends Parts 1, 91, 121, 125, 129, and 135 of the Federal Aviation Regulations (14 CFR Parts 1, 91, 121, 125, 129, and 135) effective February 9, 1989.

The authority citation for Part 135 is revised to read as follows:

Authority: 49 U.S.C. 1354(a), 1355(a), 1421 through 1431, and 1502; 49 U.S.C. 106(g) (Revised, Pub. L. 97-449, January 12, 1983).

Amendment 135-31

Fire Protection Requirements for Cargo or Baggage Compartments

Adopted: February 10, 1989 **Effective: March 20, 1989**

(Published in 54 FR 7384, February 17, 1989)

SUMMARY: These amendments upgrade the fire safety standards for cargo or baggage compartments in certain transport category airplanes used in air carrier, air taxi, or commercial service. Ceiling and sidewall liner panels that are not constructed of aluminum or glass fiber reinforced resin must be replaced with improved panels prior to a specified date. These standards are the result of research and fire testing and are intended to increase airplane fire safety.

FOR FURTHER INFORMATION CONTACT: Gary L. Killion, Manager, Regulations Branch, ANM-114, Transport Airplane Directorate, Aircraft Certification Service, FAA, 17900 Pacific Highway South, C-68966, Seattle, Washington 98168; telephone (206) 431-2114.

SUPPLEMENTARY INFORMATION:

Background

On October 28, 1987, the FAA issued Notice of Proposed Rulemaking (NPRM) 87-11 (52 FR 42512; November 5, 1987). This notice proposed to upgrade the fire safety standards for cargo or baggage compartments in certain transport category airplanes used in air carrier, air taxi, or commercial service.

During the early post-World War II period, it was recognized that timely detection of a fire by a crewmember while at his or her station and prompt control of the fire when detected were necessary for protection of the airplane from a fire originating in a cargo or baggage compartment. Because the requirements for detection and extinguishment varied depending on the type and location of the compartment, a classification system was established.

Three classes were initially established and defined as follows:

Class A—A compartment in which the presence of a fire would be easily discovered by a crewmember while at his or her station, and of which all parts are easily accessible in flight. This is typically a small compartment used for crew luggage and located in the cockpit where a fire would be readily detected and extinguished by a crewmember. Due to the small size and location of the compartment, and the relatively brief time required to extinguish a fire, a liner is not needed to protect adjacent structure.

Class B—A compartment with sufficient access in flight to enable a crewmember to effectively reach any part of the compartment with the contents of a hand fire extinguisher and which incorporates a separate, approved smoke or fire detector system to give warning at the pilot or flight engineer station. A Class B compartment is typically much larger than a Class A compartment and can be located in an area remote from the cockpit. Because of the larger size of the compartment and the greater time interval likely to occur before a fire would be controlled, a liner meeting the flame penetration standards of § 25.855 and Part I of Appendix F of Part 25 must be provided to protect adjacent structure. A Class B compartment is typically the large cargo portion of the cabin of an airplane carrying a combination of passengers and cargo (frequently referred to as a "combi" airplane) or the relatively small baggage compartment located within the pressurized portion of an airplane designed for executive transportation.

Class C—As defined at the time of initial classification, any compartment that did not fall into either Class A or B was a Class C compartment. Class C compartments differ from Class B compartments primarily in that built-in extinguishing systems are required for control of fires in lieu of crewmember accessibility. The volumes of Class C compartments in currently used domestic jet transport category airplanes range from approximately 700 to 3,000 cubic feet.

Later, two additional classes were established and defined as follows:

Class D—A compartment in which a fire would be completely contained without endangering the safety of the airplane or the occupants. A Class D compartment is similar to a Class C compartment in that both are located in areas that are not readily accessible to a crewmember. In lieu of providing fire or smoke detection and extinguishment, Class D compartments are designed to control a fire by severely restricting the supply of available oxygen. Because an oxygen-deprived fire might continue to smolder for the duration of a flight, the capability of the liner to resist flame penetration is especially important. The volumes of Class D compartments in transport category airplanes currently used in domestic air carrier service range from approximately 225 to 1,630 cubic feet. Some airplanes designed for executive transportation and used in air taxi service also have relatively small (15-25 cubic feet) Class D compartments located outside the pressurized portions of the cabin.

Class E—A cargo compartment of an airplane used only for the carriage of cargo. In lieu of providing extinguishment, means must be provided to shut off the ventilating airflow to or within a Class E compartment. In addition, procedures, such as depressurizing the airplane, are stipulated to minimize the amount of oxygen available in the event a fire occurs in a Class E compartment.

The FAA conducted a series of full-scale tests at its Technical Center to investigate the capability of three liner materials to resist flame penetration under conditions representative of actual cargo or baggage compartment fires. The tests were conducted using simulated Class C and D compartments. Copies of Report No. DOT/FAA/CT-83/44, A Laboratory Test for Evaluating the Fire Containment Characteristics of Aircraft Class D Cargo Comparment Lining Material, dated October 1983, and Report No. DOT/FAA/CT 84/21, Suppression and Control of Class C Cargo Compartment Fires, dated February 1985, have been placed in the Rules Docket. Copies of these reports, which describe the FAA testing, are available for public inspection and are also available for purchase from the National Technical Information Service in Springfield, Virginia 22161. Although cargo or baggage is sometimes placed in compartments in preloaded containers, the tests were conducted with bulk-loaded baggage because cargo or baggage is frequently bulk-loaded directly into the compartments in actual service. In conjunction with those tests, the FAA developed a method of testing liner materials utilizing a 2 gallons-per-hour kerosene burner. The materials tested—glass fiber reinforced resin (rigid fiberglass) Kevlar and Nomex—comprise the primary liner materials currently used in domestic jet transport airplanes.

Although liners constructed of Kevlar or Nomex met the existing standards of Part 25, it was found from those tests that a fire could rapidly burn them under representative conditions. In addition to the fire hazards associated with the initial flame penetration, the ability of the compartment to restrict the supply of oxygen in the compartment would be hindered. That, in turn, could result in a fire of increased intensity. In contrast, the capability of liners constructed of glass fiber reinforced resin to resist flame penetration was typically found to be very high regardless of the resin used. This is because the fiberglass remains after the resin burns out and serves as a flame arrester. As a result of those tests, new type certification standards were adopted for Class C or D cargo or baggage compartments in transport category airplanes (Amendment 25-60; 51 FR 18236; May 16, 1986). The newly adopted standards, which are applicable to airplanes for which application for type certificate is made after June 16, 1986, include new test methods for the ceiling and sidewall liner panels. In addition, the maximum volume of a Class D compartment is limited to 1,000 cubic feet.

Subsequent testing conducted at the Technical Center showed that liners constructed of aluminum were better in regard to flame penetration resistance than those of Kevlar or Nomex, although not generally as good as those constructed of glass fiber reinforced resin. On the other hand, nonglass fiber reinforced resin construction, such as blankets or battings, was found to be unsatisfactory because the supporting material would burn away rapidly. In the absence of the supporting material, the fiberglass would fall out of place.

Although Amendment 25-60 provides new standards for future transport category airplanes, it does not affect airplanes currently in service nor the airplanes that will be produced under type certificates for which application was made prior to June 16, 1986. Although the majority of the transport category airplanes currently used in U. S. air carrier, air taxi and commercial service utilize liners constructed of glass fiber reinforced resin for ceiling and sidewalls of cargo or baggage compartments, certain models use liners constructed of Kevlar or Nomex. In order to preclude the continued use of such materials, Notice 87-11 proposed to add a new § 121.314 and to amend 135.169 to require improved standards for the cargo or baggage compartment liners in transport category airplanes used in such service.

Due to the additional burden of retrofitting existing airplanes, the standards proposed in Notice 87-11 differ somewhat from those provided by Amendment 25-60 for future designs. As proposed in Notice 87-11, existing installations with liners constructed of glass fiber reinforced resin would be acceptable without further tests. Previously approved installations utilizing aluminum ceiling or sidewall liner panels could also be retained; however, aluminum could not be used to replace other materials. Ceiling and sidewall panels constructed of other materials would have to be replaced with panels constructed of glass fiber reinforced resin or with materials tested using the apparatus and procedures recently adopted for Part 25. The acceptance criteria for such materials would be the same as for materials tested for compliance with Part 25.

The term "liner," as used in this final rule and in Amendment 25-60 also includes any design features which would affect the capability of the liner to safely contain a fire. In the case of glass fiber reinforced resin or aluminum panels, the materials of such features would have to have the fire integrity of the basic material; or the design features would have to be tested along with the basic panel material unless they have been previously found satisfactory. For example, joints that are constructed with fireproof fasteners and are not subject to gaps caused by distortion need not be tested.

On the other hand, the test specimens would include joints constructed with nonfireproof fasteners or joints subject to distortion. Similarly, test specimens would include lamp lenses, if failure of the lenses would allow flames to pass; however, lamps need not be included in the test specimen if the lamp incorporates a fireproof body which would prevent the passage of flames.

Unlike the new standards of Part 25, the standards proposed in Notice 87-11 would not be applicable to compartments with volumes less than 200 cubic feet. The fire hazards associated with relatively small compartments are not as great due to the limited volume of oxygen and amount of combustible materials that would be contained in them. The present liners used in those compartments are, therefore, considered to provide an acceptable level of safety.

The new standards of Part 25 for future type designs include a maximum volume of 1,000 cubic feet for a Class D compartment. A corresponding requirement was not proposed in Notice 87-11 because the redesign and retrofit of airplanes with Class D compartments larger than 1,000 cubic feet was considered to be extremely burdensome and did not appear to be warranted due to a lack of adverse service experience. Recent service experience has shown, however, that additional new standards, such as requirements for fire or smoke detectors and extinguishment, may be needed for both Class B and Class D compartments. (The installation of such equipment would, in effect, make such compartments Class C.) The FAA is, therefore, considering further rulemaking in that regard. Nevertheless, such further rulemaking would not lessen the need for the new standards proposed in Notice 87-11.

Compliance with the standards proposed in Notice 87-11 would not be required for transport category airplanes type certificated on or before January 1, 1958, because their advanced age and limited numbers in Part 121 or 135 operation would make compliance impractical from an economic standpoint. That date was selected because the rule would include Boeing 707 and Douglas DC-8 vintage and later airplanes, and would exclude older airplanes, such as the Douglas DC-6's or DC-7's.

As proposed in Notice 87-11, all other transport category airplanes which are operated under the provisions of Part 121 or 135 would have to meet the new standards within two years after the effective date of the amendment. The two year compliance period is intended to allow operators and manufacturers time to select and qualify prospective liner materials and incorporate them with a minimum of disruption to fleet schedules or assembly lines.

Discussion of Comments

Comments were received from a diversity of commenters ranging from organizations representing various aircraft manufacturers and operators, to aviation trade unions. Commenters also included a foreign airworthiness authority and producers of candidate interior materials. Two commenters support the proposed new standards without qualification. The seven other commenters support the general intent of the rulemaking; however, they offer suggested changes and additions.

One commenter recommends that the proposed standards should apply to compartments smaller than 200 cubic feet, as well as to larger compartments. As noted above, the fire hazards associated with relatively small compartments are not as great due to the limited volume of oxygen and amount of combustible materials that would be contained in them. Furthermore, service experience does not indicate that improved liners are needed in such compartments.

The same commenter recommends that all Class D compartments should be upgraded to Class C compartments by providing fire detection and extinguishing means. This would be beyond the scope of Notice 87-11 and could not be adopted at this time. The FAA is, however, considering future rulemaking in that regard as noted above.

The commenter also recommends that all cargo compartments should be required to have liners. All cargo or baggage compartments, except Class A compartments, are presently required to have liners. By definition, a Class A compartment must be located such that the presence of a fire would be easily detected by a crewmember while at his or her station. In addition, all parts of a Class A compartment must be easily accessible in flight. Class A compartments are typically small compartments located in the cockpit and used for crew luggage. Due to the brief time needed to detect and extinguish a fire, a liner would serve no useful purpose in a Class A compartment.

One commenter is concerned that the language of proposed § 121.314 (a)(1) and (2) would imply that glass fiber reinforced resin construction does not necessarily satisfy the test requirements of Part III of Appendix F to Part 25. In contrast, another commenter is concerned that the language would imply that glass fiber reinforced resin construction would pass the new standards of Part 25. That commenter notes that some liners constructed of glass fiber reinforced resin do not meet the new standards and proposes that all constructions, including glass fiber reinforced resin, should be required to meet the new standards. The second commenter is correct in noting that glass fiber reinforced resin construction does not necessarily meet the new standards of Part 25. It was found, however, to be so likely to meet or exceed the new standards that the cost of conducting a test for each installation to show compliance with the new standards would not be justified. Glass fiber reinforced resin construction is, therefore, considered acceptable without further testing, insofar as compliance with § 121.314 is concerned.

Three commenters object to the statement in proposed § 121.314 that the term "liner" includes any design feature which would affect the capability of the liner to safely contain a fire. They assert that there are installation features of almost every existing cargo compartment which do not meet the new standards of Part 25. One of the three commenters draws a parallel to the recent rulemaking concerning cabin interior materials (Amendment 25-61; 51 FR 26208; July 21, 1986). In that regard, the commenter notes that the FAA exempted a number of interior components in that rulemaking because they would make an insignificant contribution to the flammability of the interior when compared to the large interior surfaces.

The commenters incorrectly assume that proposed § 121.314 would require all design features to be tested to show compliance with the new standards of Part 25. The design features are not considered as separate entities insofar as compliance with the proposed standards is concerned. Rather, they are considered as part of the liner and then only to the extent that they would affect the capability of the liner to safely contain a fire. Design features which could fail without compromising the capability of the liner would not have to be considered at all. As parts of the liners, design features which would affect the capability of the liners to safely contain fires would be subject to the same exceptions for glass fiber reinforced resin and aluminum as the basic liner panel material.

The parallel made to the recent interior materials rulemaking is inappropriate. The purpose of the interior materials rulemaking is to minimize the contribution of the materials to a fire that is already burning in the cabin. A relatively small component would make an insignificant contribution to the flammability of the cabin. The purpose of the proposed cargo or baggage compartment liner standards, on the other hand, is to prevent a fire in a compartment from penetrating the compartment walls and spreading to other parts of the airplane. The consequences of flames penetrating a design feature in a liner are just as great as those of flames penetrating a portion of the basic liner material. In addition, it is pointless to have a liner with excellent capability to resist flame penetration if the joints or attachments can fail and allow the liner to fall out of place.

One commenter states they were advised by the FAA Technical Center that the test apparatus required for compliance with the new standards of Part 25 is not appropriate for testing joints, seams, fasteners, etc. While the test apparatus and procedures were originally developed using only basic liner panels, the Technical Center has since demonstrated that the test apparatus can be used effectively when the liner does incorporate joints, seams, fasteners, etc.

One commenter expresses concern that there would be a detrimental impact on the airlines' current maintenance programs which allow for temporary repair of liner damage with fire resistant tapes. Some current repair methods may, in fact, not meet the new standards and have to be replaced. Nevertheless, as in the case of design features, it is pointless to have a liner with excellent capability to resist flame penetration if a substandard repair were to fail in the event a fire occurred and leave an opening in the liner.

One commenter believes the proposed two-year compliance period should be extended to four years in order to provide sufficient time for operators to comply during major scheduled maintenance periods. The commenter asserts that such scheduled maintenance periods occur at three to five year periods and that airplanes would have to be removed from scheduled service to comply within the proposed two-year period. The FAA does not concur that airplanes would have to be removed from scheduled service to comply within two years. The existing liners are, in fact, routinely removed at intermediate times for inspection of structure surrounding the cargo or baggage compartments. Replacement liners could easily be installed during those inspections.

One commenter believes that the term "rigid fiberglass" does not accurately describe the materials in question. The commenter notes that the resistance of such materials to fire penetration is due to their being reinforced with fiberglass rather than their being "rigid" per se. The commenter further notes that resins used in laminates fabricated with such fiberglass reinforcement may be flexible or rigid and thereby produce flexible or rigid laminates. The commenter states that as long as the materials are fiberglass-reinforced laminates (as opposed to fiberglass batting, such as is used in thermal or accoustical insulation), they are highly resistant to fire penetration. The FAA concurs that "rigid fiberglass" is not an accurate description. The term "rigid fiberglass" has, therefore, been removed leaving only the term "glass fiber reinforced resin".

One commenter notes that the trademarks "Kevlar" and "Nomex" are the property of the commenter and serve as the exclusive designation for aramid fiber products manufactured by the commenter. The commenter is particularly concerned that the use of those terms in the NPRM implies that the impact is only on those products and that the organic materials of other manufacturers are not affected. The commenter is further concerned that the use of those terms implies that Kevlar or Nomex cannot be a component of the replacement materials used to comply with the proposed standards. The commenter also asserts fiberglass construction, as well as Kevlar and Nomex construction, failed to meet the new standards of Part 25.

The FAA regrets any implication that the products of the commenter are unsatisfactory by definition and that similar materials of other producers are satisfactory. Nevertheless, as noted in the preamble to Notice 87-11, Kevlar and Nomex are the only two materials, other than fiberglass and aluminum, that are widely used in the construction of the cargo or baggage compartment liners that are in service today. Furthermore, the liners used in the compartments of the Boeing 757 and 767, the Saab SF-340, and the Lockheed L-1011 are known to the aircraft industry and the general public as "Kevlar" or "Nomex." Because, as the commenter notes, there may be other such constructions which do, in fact, meet the new standards, the use of the generic term "aramid fiber products" in lieu of "Kevlar" and "Nomex" in the NPRM would have misled the public.

The FAA also regrets any implication that future materials identified as "Kevlar" or "Nomex" are unsuitable regardless of whether they meet the new standards of Part 25. Obviously, any material which meets those standards is acceptable regardless of the name given to it. The FAA is, however, concerned that the use of the same name for materials with such different performance characteristics could lead to the inadvertent use of the wrong material. In order to preclude a hazard through the inadvertent use of the "Kevlar. or "Nomex" construction that has been found unsatisfactory, the FAA strongly recommends that the commenter assign new or modified designations to the materials that do meet the new standards.

As noted above, glass fiber reinforced resin construction was found to be so likely to meet or exceed the new standards of Part 25 that the cost of conducting a test for each installation would not be justified.

The regulatory evaluation prepared for Notice 87-11 was based, in part, on the understanding that 44 Saab SF-340 airplanes would have to be modified to replace existing liners constructed of Kevlar and that all of the airplanes produced by Airbus Industrie already have liners constructed of materials which would meet the new standards. One commenter states that the SF-340 airplanes would not be affected because the volume of the largest cargo or baggage compartment in the Model SF-340 is 189 cubic feet. The commenter is, of course, correct in believing that compartments which are less than 200 cubic feet would not be affected. The comment that the largest compartment in the Model SF-340 is only 189 cubic feet in volume is, however, contrary to the manufacturer's SF-340 Aircraft Operation Manual which states that the volume of the baggage compartment is 225 cubic feet. A copy of the pertinent pages of that manual has been placed in the docket for this rulemaking. To be conservative, the regulatory evaluation prepared for this final rule is based on the assumption that the SF-340 airplanes would have to meet the new standards. Another commenter notes that the forward and aft cargo bay ceiling panels of 12 Airbus A-300B4 airplanes of U. S. registry would have to be replaced. This additional information is addressed in the new regulatory evaluation prepared for these amendments.

The regulatory evaluation prepared for Notice 87-11 was based on the assumption that there would be a slight increase in airplane weight due to the use of heavier materials needed to comply with the proposed ne standards. One commenter submitted data showing that new materials which would meet the new standards and save about half the weight of glass fiber reinforced resin liners are available. This information is also addressed in the new regulatory evaluation prepared for these amendments.

Since the time Notice 87-11 was prepared, it has come to the attention of the FAA that the practice of incorporating certain provisions of Part 121 in Part 135 by reference may cause confusion. In order to preclude any confusion in this regard, Part 135 is amended to include the new standards explicitly rather than by reference. This is a nonsubstantive editorial change.

Except as noted above, Parts 121 and 135 are amended as proposed in Notice 87-11.

Regulatory Evaluation

The following is a summary of the final cost impact and benefit assessment of this regulation amending Parts 121 and 135 of the FAR. These amendments upgrade the fire safety standards for cargo or baggage compartment liner materials in certain transport category airplanes used in air carrier, air taxi, or commercial service. Transport category airplanes type certificated after January 1, 1958, will be required to have ceiling and sidewall panels constructed of either glass fiber reinforced resin, aluminum (only for liner installations approved prior to the effective date of this rule), or materials meeting the test requirements of Part 25, Appendix F, Part III.

The FAA issued a rule in 1986 mandating similar, but more stringent, standards for newly type certificated transport category airplanes, and a NPRM (52 FR 42512; November 5, 1987) proposing retrofitting cargo or baggage compartment liners in transport category airplanes already in service.

Several of the written comments received as of May 3, 1988, in response to the NPRM pertain to the economic impact of the proposal. Commenters include an organization representing air carriers, and a manufacturer of lining materials, as well as others.

One commenter objects to the inclusion of 44 Saab SF-340 airplanes in the initial regulatory evaluation's list of airplanes that would require modification. This commenter indicates that the Saab SF-340 would not be affected by the proposed standards, since its largest cargo or baggage compartment has only 189 cubic feet of volume, whereas the NPRM would only affect compartments larger than 200 cubic feet.

The FAA has not been able to corroborate this assertion. The manufacturer's SF-340 Aircraft Operations Manual states that the volume of the baggage compartment is 225 cubic feet. Therefore, the FAA assumes, for purposes of this evaluation, that all Saab SF-340 airplanes operating under Part 121 will require retrofit of their cargo or baggage compartment liners.

Another commenter notes that twelve Airbus A300-B4 airplanes of U.S. registry would require replacement of cargo bay ceiling panels, in addition to the airplanes listed in the initial regulatory evaluation as requiring modification.

The FAA disagrees with this comment. The manufacturer of the A300-B4 has indicated that it, and all other types of Airbus airplanes, have cargo compartment liners constructed of glass fiber reinforced resin, which would meet the proposed requirements.

The same commenter also indicates that the initial regulatory evaluation's estimate of the total cost of the proposed rule excludes additional costs of up to $47 million annually, resulting from the removal of aircraft from service to comply with the proposed rule within the specified two year compliance period.

The FAA disagrees that affected airplanes would need to be removed from service to comply with the proposed rule within two years. Existing liners are routinely removed more frequently than every two years, for inspection of structure surrounding the cargo or baggage compartments. Replacement liners could easily be installed during these inspections. Therefore, compliance with the proposed rule within two years would not cause any additional costs due to removal of airplanes from service.

The commenter indicates as well that the initial regulatory evaluation does not take into account any additional costs due to the required replacement of design features, such as joints and fixtures, in addition to the large panel surface areas.

The FAA's initial cost projections for materials and labor were based on estimates of the costs of complete kits for replacing cargo or baggage compartment liners, including engineering and certification costs. The FAA believes that the costs of replacement of design features would not add significantly to the total cost of liner replacement since very few of these features would be likely to require replacement. Therefore, the FAA has not increased its estimates of the cost per aircraft of liner replacement in the final regulatory evaluation.

Many design features are mounted on the liner panels and could fail without compromising the fire containment characteristics of the liner itself. Such features would not require replacement. Furthermore, information available to the FAA indicates that support or attachment structure for cargo or baggage compartment liner panels in virtually all of the affected airplanes is constructed of aluminum, or the panels are mounted directly to the airframe structure with aluminum or steel fasteners. Since aluminum is an acceptable material for the construction of liners, according to the proposed rule, such support or attachment structures would not need to be tested or replaced. The FAA also considers that steel fasteners meet the new fire protection standards and that no further testing is needed for such fasteners.

Finally, another commenter indicates that new materials containing layers of organic fibers and fire blocking material could meet the proposed burnthrough requirements, while saving as much as one half the weight of glass reinforced liners with similar impact resistance.

The FAA recognizes that materials may now exist or may be developed in the future that contain fire as effectively as glass fiber reinforced resin panels, but weigh less and provide cost savings from reduced fuel consumption. However, in order not to underestimate the costs of this rule, the FAA continues to assume in the final regulatory evaluation that all cargo or baggage compartment retrofits will employ the heavier glass fiber reinforced panels.

Total costs of these amendments are expected to be $21.3 million in 1987 dollars, or $15.5 million discounted present value, and are evaluated over the ten-year period following the expected 1991 compliance date. These costs include labor and material costs of installing cargo compartment liners in certain airplanes that do not already meet the standards set forth in the amendments, as well as the additional fuel consumed by these airplanes because of the slight increase in the weight of these new liners. Total costs can be broken down as follows:

	1987 Dollars	*Present Value*
Cost Retrofit	$14.1 million	$11.7 million
Cost of Additional Fuel	$ 7.2 million	$ 3.8 million
Total Costs:	**$21.3 million**	**$15.5 million**

Cost estimates have been adjusted from the initial regulatory evaluation to account for new projections of the composition and size of the fleet of affected airplanes, and are updated from 1986 to 1987 dollars. Airplanes expected to be effected by these amendments include certain Boeing 727, 737, 747, 757 and 767's, Lockheed L-1011's, and Saab SF-340's.

This rule will be cost beneficial if it succeeds in preventing only one accident. Comparing the potential benefit of avoiding airplane property loss alone (ranging from approximately $2.6 million to $23 million) against the costs of bringing all airplanes of a specific model into compliance, the benefit would greatly exceed the costs. Taking into account the overall costs and the benefits of preventing fatalities as well as property loss, should the only accident prevented involve the smallest airplane subject to the rule change (the Saab SF-340, with an average load of 20 passengers), the cost per fatality avoided would be $645 thousand. Economists generally agree that this figure is well below the $1 million criterion for "cost per life saved". Furthermore, if this rule succeeds in preventing an accident involving a larger or more fully loaded airplane, the cost per fatality avoided will be lower.

Regulatory Flexibility Act Determination

The FAA has identified 20 small entity air carriers that operate airplane models affected by this rule. All but three of these carriers operate only Boeing 727 and 737 airplanes among the affected airplanes, the least expensive models to bring into compliance. Should these air carriers operate as many as nine of these airplanes, the largest number allowed for an operator to be considered a small entity, then the annualized retrofit cost for each operator would be under $750. This is far less than the threshold value of $3,600 prescribed in FAA Order 2100.14A, *Regulatory Flexibility Criteria and Guidance*, for determining significant economic impact on unscheduled operators, and significantly lower than the $92,700 threshold value for scheduled operators. For these reasons, these amendments are not expected to result in a significant economic impact on a substantial number of small entities. Nonetheless, they are expected to provide a benefit for those small entities engaged in manufacturing cargo compartment liner material. The FAA believes, however, that this benefit will not be significant.

International Trade Impact Analysis

This rulemaking will have little or no impact on trade for either U.S. firms doing business in foreign countries or foreign firms doing business in the United States. Foreign air carriers, which are not affected by this rule, will not gain any competitive advantage over the domestic operations of U.S. carriers because they are prohibited from transporting passengers between origin-destination points within the United States.

In international operations, foreign air carriers may realize a slight cost advantage. However, the costs of this rule are extremely small in comparison to the overall cost of engaging in international air transportation. Therefore, no appreciable trade impact is expected to result from these amendments.

Federalism Implications

The regulations adopted herein will not have substantial direct effects on the states, on the relationship between the national government and the states, or on the distribution of power and responsibilities among the various levels of government. Therefore, in accordance with Executive Order 12612, it is determined that this final rule does not have sufficient federalism implications to warrant the preparation of a Federalism Assessment.

CONCLUSION

For the reasons discussed earlier in the preamble, the FAA has determined that this is not a major rule as defined in Executive Order 12291. The FAA has determined that this action is significant under DOT Regulatory Policies and Procedures (44FA 11034; February 26, 1979). In addition, the FAA certifies that this rule will not have a significant economic impact, positive or negative, on a substantial number of small entities under the criteria of the Regulatory Flexibility Act, since the magnitudes of the impacts are not significant. A regulatory evaluation of this action, including a Regulatory Flexibility Determination and a Trade Impact Assessment, has been prepared for this regulation and has been placed in the docket. A copy of this evaluation may be obtained by contacting the person identified under the caption "FOR FURTHER INFORMATION CONTACT."

Adoption of the Amendments

Accordingly, Parts 121 and 135 of the Federal Aviation Regulations (FAR) 14 CFR, Parts 121 and 135, are amended effective March 20, 1989.

The authority citation for Part 135 continues to read as follows:

Authority: 49 U.S.C. 1354(a), 1355, 1356, 1357, 1401, 1421-1431, and 1502; 49 U.S.C. 106(g) (Revised, Pub. L. 97-449, January 12, 1983); 49 CFR 1.47(a).

Part 135—Air Taxi Operators and Commercial Operators

Subpart A—General

§ 135.1 Applicability.

(a) Except as provided in paragraph (b) of this section, this part prescribes rules governing—

(1) Air taxi operations conducted under the exemption authority of Part 298 of this title;

(2) The transportation of mail by aircraft conducted under a postal service contract awarded under section 5402c of Title 39, United States Code;

(3) The carriage in air commerce of persons or property for compensation or hire as a commercial operator (not an air carrier) in aircraft having a maximum seating capacity of less than 20 passengers or a maximum payload capacity of less than 6,000 pounds, or the carriage in air commerce of persons or property in common carriage operations solely between points entirely within any state of the United States in aircraft having a maximum seating capacity of 30 seats or less or a maximum payload capacity of 7,500 pounds or less; and

(4) Each person who is on board an aircraft being operated under this part.

(b) **[**Except as provided in paragraph (c) of this section, this part does not apply to—**]**

(1) Student instruction;

(2) Nonstop sightseeing flights that begin and end at the same airport, and are conducted within a 25 statute mile radius of that airport;

(3) Ferry or training flights;

(4) Aerial work operations, including—

(i) Crop dusting, seeding, spraying, and bird chasing;

(ii) Banner towing;

(iii) Aerial photography or survey;

(iv) Fire fighting;

(v) Helicopter operations in construction or repair work (but not including transportation to and from the site of operations); and

(vi) Powerline or pipeline patrol, or similar types of patrol approved by the Administrator;

(5) Sightseeing flights conducted in hot air balloons;

(6) Nonstop flights conducted within a 25 statute mile radius of the airport of takeoff carrying persons for the purpose of intentional parachute jumps;

(7) Helicopter flights conducted within a 25 statute mile radius of the airport of takeoff, if—

(i) Not more than two passengers are carried in the helicopter in addition to the required flight crew;

(ii) Each flight is made under VFR during the day;

(iii) The helicopter used is certificated in the standard category and complies with the 100-hour inspection requirements of Part 91 of this chapter;

(iv) The operator notifies the FAA Flight Standards District Office responsible for the geographic area concerned at least 72 hours before each flight and furnishes any essential information that the office requests;

(v) The number of flights does not exceed a total of six in any calendar year;

(vi) Each flight has been approved by the Administrator; and

(vii) Cargo is not carried in or on the helicopter;

(8) Operations conducted under Part 133 or 375 of this title;

(9) Emergency mail service conducted under section 405(h) of the Federal Aviation Act of 1958; or

(10) This part does not apply to operations conducted under the provisions of § 91.59.

[(c) For the purpose of §§ 135.249, 135.251, and 135.353, "operator" means any person or entity conducting an operation listed in paragraph (b) of this section for compensation or hire except operation of foreign civil aircraft navigated within the United States pursuant to Part 375 described in paragraph (b)(8) and emergency mail service operation pursuant to Section 405(h) of the Federal Aviation Act of 1958 described in paragraph (b)(9). Each operator and each employee of an operator shall comply with the requirements of §§ 135.249, 135.251, and 135.353 of this part.

[(d) Notwithstanding the provisions of paragraph (c) of this section, an operator who does not hold a Part 121 certificate or a Part 135 certificate is permitted to use a person, who is otherwise authorized to perform aircraft maintenance or preventive maintenance duties and who is not subject to the requirements of and FAA-approved anti-drug program to perform—

[(1) Aircraft maintenance or preventive maintenance on the operator's aircraft if the operator would be required to transport the aircraft more than 50 nautical miles further than the closest available repair point from the operator's principal place of operations to obtain these services; or

[(2) Emergency repairs on the operator's aircraft if the aircraft can not be safely operated to a location where an employee subject to the requirements of this appendix can perform the emergency repairs.]

§ 135.2 Air taxi operations with large aircraft.

(a) Except as provided in paragraph (d) of this section, no person may conduct air taxi operations in large aircraft under an individual exemption and authorization issued by the Civil Aeronautics Board or under the exemption authority of Part 298 of this title, unless that person—

(1) Complies with the certification requirements for supplemental air carriers in Part 121 of this chapter, except that the person need not obtain, and that person is not eligible for, a certificate under that part; and

(2) Conducts those operations under the rules of Part 121 of this chapter that apply to supplemental air carriers.

However, the Administrator may issue operations specifications which require an operator to comply with the rules of Part 121 of this chapter that apply to domestic or flag air carriers, as appropriate, in place of the rules required by paragraph (a)(2) of this section, if the Administrator determines compliance with those rules is necessary to provide an appropriate level of safety for the operation.

(b) The holder of an operating certificate issued under this part who is required to comply with Subpart L of Part 121 of this chapter, under paragraph (a) of this section, may perform and approve maintenance, preventive maintenance, and alterations on aircraft having a maximum passenger seating configuration, excluding any pilot seat, of 30 seats or less and a maximum payload capacity of 7,500 pounds or less as provided in that subpart. The aircraft so maintained shall be identified by registration number in the operations specifications of the certificate holder using the aircraft.

(c) Operations that are subject to paragraph (a) of this section are not subject to §§ 135.21 through 135.43 of Subpart A and Subparts B through J of this part. Seaplanes used in operations that are subject to paragraph (a) of this section are not subject to § 121.291(a) of this chapter.

(d) Operations conducted with aircraft having a maximum passenger seating configuration, excluding any pilot seat, of 30 seats or less, and a maximum payload capacity of 7,500 pounds or less shall be conducted under the rules of this part. However, a certificate holder who is conducting operations on December 1, 1978, in aircraft described in this paragraph may continue to operate under paragraph (a) of this section.

(e) For the purposes of this part—

(1) "Maximum payload capacity" means:

(i) For an aircraft for which a maximum zero fuel weight is prescribed in FAA technical specifications, the maximum zero fuel weight, less empty weight, less all justifiable aircraft equipment, and less the operating load (consisting of minimum flight crew, foods and beverages and supplies and equipment related to foods and beverages, but not including disposable fuel or oil);

(ii) For all other aircraft, the maximum certificated takeoff weight of an aircraft, less the empty weight, less all justifiable aircraft equipment, and less the operating load (consisting of minimum fuel load, oil, and flight crew). The allowance for the weight of the crew, oil, and fuel is as follows:

(A) Crew—200 pounds for each crewmember required under this chapter.

(B) Oil—350 pounds.

(C) Fuel—the minimum weight of fuel required under this chapter for a flight between domestic points 174 nautical miles apart under VFR weather conditions that does not involve extended overwater operations.

(2) "Empty weight" means the weight of the airframe, engines, propellers, rotors, and

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fixed equipment. Empty weight excludes the weight of the crew and payload, but includes the weight of all fixed ballast, unusable fuel supply, undrainable oil, total quantity of engine coolant, and total quantity of hydraulic fluid.

(3) "Maximum zero fuel weight" means the maximum permissible weight of an aircraft with no disposable fuel or oil. The zero fuel weight figure may be found in either the aircraft type certificate data sheet or the approved Aircraft Flight Manual, or both.

(4) For the purposes of this paragraph, "justifiable aircraft equipment" means any equipment necessary for the operation of the aircraft. It does not include equipment or ballest specifically installed, permanently or otherwise, for the purpose of altering the empty weight of an aircraft to meet the maximum payload capacity specified in paragraph (d) of this section.

§ 135.3 Rules applicable to operations subject to this Part.

Each person operating an aircraft in operations under this Part shall—

(a) While operating inside the United States, comply with the applicable rules of this chapter; and

(b) While operating outside the United States, comply with Annex 2, Rules of the Air, to the Convention on International Civil Aviation or the regulations of any foreign country, whichever applies, and with any rules of Part 61 and 91 of this chapter and this Part that are more restrictive than that Annex or those regulations and that can be complied with without violating that Annex or those regulations. Annex 2 is incorporated by reference in § 91.1(c) of this chapter.

§ 135.5 Certificate and operations specifications required.

No person may operate an aircraft under this Part without, or in violation of, an air taxi/commercial operator (ATCO) operating certificate and appropriate operations specifications issued under this Part, or for operations with large aircraft having a maximum passenger seating configuration, excluding any pilot seat, of more than 30 seats, or a maximum payload capacity of more than 7,500 pounds, without, or in violation of appropriate operations specifications issued under Part 121 of this chapter.

§ 135.7 Applicability of rules to unauthorized operators.

The rules in this Part which apply to a person certificated under § 135.5 also apply to a person who engages in any operation governed by this Part without an appropriate certificate and operations specifications required by § 135.5.

§ 135.9 Duration of certificate.

(a) An ATCO operating certificate is effective until surrendered, suspended or revoked. The holder of an ATCO operative certificate that is suspended or revoked shall return it to the Administrator.

(b) Except as provided in paragraphs (c) and (d) of this section, an ATCO operating certificate in effect on December 1, 1978, expires on February 1, 1979. The certificate holder must continue to conduct operations under Part 135 and the operations specifications in effect on November 30, 1978, until the certificate expires.

(c) If the certificate holder applies before February 1, 1979, for new operations specifications under this Part, the operating certificate held continues in effect and the certificate holder must continue operations under Part 135 and operations specifications in effect on November 30, 1978, until the earliest of the following—

(1) The date on which new operations specifications are issued; or

(2) The date on which the Administrator notifies the certificate holder that the application is denied; or

(3) August 1, 1979.

If new operations specifications are issued under paragraph (c) (1) of this paragraph, the ATCO operating certificate continues in effect until surrendered, suspended or revoked under paragraph (a) of this section.

(d) A certificate holder may obtain an extension of the expiration date in paragraph (c) of this section, but not beyond December 1, 1979, from the Director, Flight Standards Service, if before July 1, 1979, the certificate holder—

(1) Shows that due to the circumstances beyond its control it cannot comply by the expiration date; and

(2) Submits a schedule for compliance, acceptable to the Director, indicating that compliance will be achieved at the earliest practicable date.

(e) The holder of an ATCO operating certificate that expires, under paragraphs (b), (c), or (d) of this section, shall return it to the Administrator.

§ 135.10 Compliance dates for certain rules.

[After January 2, 1991, no certificate holder may use a person as a flight crewmember unless that person has completed the windshear ground training required by §§ 135.345(b)(6) and 135.351(b)(2) of this part.]

§ 135.11 Application and issue of certificate and operations specifications.

(a) An application for an ATCO operating certificate and appropriate operations specifications is made on a form and in a manner prescribed by the Administrator and filed with the FAA Flight Standards District Office that has jurisdiction over the area in which the applicant's principal business office is located.

(b) An applicant who meets the requirements of this part is entitled to—

(1) An ATCO operating certificate containing all business names under which the certificate holder may conduct operations and the address of each business office used by the certificate holder; and

(2) Separate operations specifications, issued to the certificate holder, containing:

(i) The type and area of operations authorized.

(ii) The category and class of aircraft that may be used in those operations.

(iii) Registration numbers and types of aircraft that are subject to an airworthiness maintenance program required by § 135.411 (a)(2), including time limitations or standards for determining time limitations, for overhauls, inspections, and checks for airframes, aircraft engines, propellers, rotors, appliances, and emergency equipment.

(iv) Registration numbers of aircraft that are to be inspected under an approved aircraft inspection program under § 135.419.

(v) Additional maintenance items required by the Administrator under § 135.421.

(vi) Any authorized deviation from this Part.

(vii) Any other items the Administrator may require or allow to meet any particular situation.

(c) No person holding operations specifications issued under this part may list on its operations specifications or on the current list of aircraft required by § 135.63(a)(3) any airplane listed on operations specifications issued under part 125.

§ 135.13 Eligibility for certificate and operations specifications.

(a) To be eligible for an ATCO operating certificate and appropriate operations specifications, a person must—

(1) Be a citizen of the United States, a partnership of which each member is a citizen of the United States, or a corporation or association created or organized under the laws of the United States or any state, territory, or possession of the United States, of which the president and two-thirds or more of the board of directors and other managing officers are citizens of the United States and in which at least 75 percent of the voting interest is owned or controlled by citizens of the United States or one of its possessions; and

(2) Show, to the satisfaction of the Administrator, that the person is able to conduct each kind of operation for which the person seeks authorization in compliance with applicable regulations; and

(3) Hold any economic authority that may be required by the Civil Aeronautics Board.

However, no person holding a commercial operator operating certificate issued under Part 121 of this chapter is eligible for an ATCO operating certificate unless the person shows to the satisfaction of the Administrator that the person's contract carriage business in large aircraft, having a maximum passenger seating configuration, excluding any pilot seat, of more than 30 seats or a maximum payload capacity of more than 7,500 pounds, will not result directly or indirectly from the person's air taxi business.

(b) The Administrator may deny any applicant a certificate under this part if the Administrator finds—

(1) That an air carrier or commercial operator operating certificate under Part 121 or an ATCO operating certificate previously issued to the applicant was revoked; or

(2) That a person who was employed in a position similar to general manager, director of operations, director of maintenance, chief pilot, or chief inspector, or who has exercised control with respect to any ATCO operating certificate holder, air carrier, or commercial operator, whose operating certificate has been revoked, will be employed in any of those positions or a similar position, or will be in control of or have a substantial ownership interest in the applicant, and that the person's employment or control contributed materially to the reasons for revoking that certificate.

§ 135.15 Amendment of certificate.

(a) The Administrator may amend an ATCO operating certificate—

(1) On the Administrator's own initiative, under section 609 of the Federal Aviation Act of 1958 (49 U.S.C. 1429) and Part 13 of this chapter; or

(2) Upon application by the holder of that certificate.

(b) The certificate holder must file an application to amend an ATCO operating certificate at least 15 days before the date proposed by the applicant for the amendment to become effective, unless a shorter filing period is approved. The application must be on a form and in a manner prescribed by the Administrator and must be submitted to the FAA Flight Standards District Office charged with the overall inspection of the certificate holder.

(c) The FAA Flight Standards District Office charged with the overall inspection of the certificate holder grants an amendment to the ATCO operating certificate if it is determined that safety in air commerce and the public interest allow that amendment.

(d) Within 30 days after receiving a refusal to amend the operating certificate, the certificate holder may petition the Director, Flight Standards Service, to reconsider the request.

§ 135.17 Amendment of operations specifications

(a) The FAA Flight Standards District Office charged with the overall inspection of the certificate holder may amend any operations specifications issued under this part if—

(1) It determines that safety in air commerce requires that amendment; or

(2) Upon application by the holder, that District Office determines that safety in air commerce allows that amendment.

(b) The certificate holder must file an application to amend operations specifications at least 15 days before the date proposed by the applicant for the amendment to become effective, unless a shorter filing period is approved. The application must be on a form and in a manner prescribed by the Administrator and be submitted to the FAA Flight Standards District Office charged with the overall inspection of the certificate holder.

(c) Within 30 days after a notice of refusal to approve a holder's application for amendment is received, the holder may petition the Director of Airworthinesss for amendments pertaining to airworthiness or the Director of Flight Operations for amendments pertaining to flight operations to reconsider the refusal to amend.

(d) When the FAA Flight Standards District Office charged with the overall inspection of the certificate holder amends operations specifications, that District Office gives notice in writing to the holder of a proposed amendment to the operations specifications, fixing a period of not less than 7 days within which the holder may submit written information, views, and arguments concerning the proposed amendment. After consideration of all relevant matter presented, that District Office notifies the holder of any amendment adopted, or a recission of the notice. The amendment becomes effective not less than 30 days after the holder receives notice of the adoption of the amendment, unless the holder petitions the Director of Airworthiness for amendments pertaining to airworthiness or the Director of Flight Operations for amendments pertaining to flight operations, for reconsideration of the amendment. In that case, the effective date of the amendment is stayed pending a decision by the Director. If the Director finds there is an emergency requiring immediate action as to safety in air commerce that makes the provisions of this paragraph impracticable or contrary to the public interest, the Director notifies the certificate holder that the amendment is effective on the date of receipt, without previous notice.

§ 135.19 Emergency operations.

(a) In an emergency involving the safety of persons or property, the certificate holder may deviate from the rules of this part relating to aircraft and equipment and weather minimums to the extent required to meet that emergency.

(b) In an emergency involving the safety of persons or property, the pilot in command may deviate from the rules of this part to the extent required to meet that emergency.

(c) Each person who, under the authority of this section, deviates from a rule of this part shall, within 10 days, excluding Saturdays, Sundays, and Federal holidays, after the deviation, send to the FAA Flight Standards District Office charged with the overall inspection of the certificate holder a complete report of the aircraft operation involved, including a description of the deviation and reasons for it.

§ 135.21 Manual requirements.

(a) Each certificate holder, other than one who uses only one pilot in the certificate holder's operations, shall prepare and keep current a manual setting forth the certificate holder's procedures and policies acceptable to the Administrator. This manual must be used by the certificate holder's flight, ground, and maintenance personnel in conducting its operations. However, the Administrator may authorize a deviation from this paragraph if the Administrator finds that, because of the limited size of the operation, all or part of the manual is not necessary for guidance of flight, ground, or maintenance personnel.

(b) Each certificate holder shall maintain at least one copy of the manual at its principal operations base.

(c) The manual must not be contrary to any applicable Federal regulations, foreign regulation applicable to the certificate holder's operations in foreign countries, or the certificate holder's operating certificate or operations specifications.

(d) A copy of the manual, or appropriate portions of the manual (and changes and additions) shall be made available to maintenance and ground operations personnel by the certificate holder and furnished to—

(1) Its flight crewmembers; and

(2) Representatives of the Administrator assigned to the certificate holder.

(e) Each employee of the certificate holder to whom a manual or appropriate portions of it are furnished under paragaph (d) (1) of this section shall keep it up to date with the changes and additions furnished to them.

(f) Except as provided in paragraph (g) of this section, each certificate holder shall carry appropriate parts of the manual on each aircraft when away from the principal operations base. The appropriate parts must be available for use by ground or flight personnel.

(g) If a certificate holder conducts aircraft inspections or maintenance at specified stations where it keeps the approved inspection program manual, it is not required to carry the manual aboard the aircraft en route to those stations.

§ 135.23 Manual contents.

Each manual shall have the date of the last revision on each revised page. The manual must include—

(a) The name of each management person required under § 135.37(a) who is authorized to act for the certificate holder, the person's assigned area of responsibility, the person's duties, responsibilities, and authority, and the name and title of each person authorized to exercise operational control under § 135.77;

(b) Procedures for ensuring compliance with aircraft weight and balance limitations and, for multiengine aircraft, for determining compliance with § 135.185;

(c) Copies of the certificate holder's operations specifications or appropriate extracted information, including area of operations authorized, category and class of aircraft authorized, crew complements, and types of operations authorized;

(d) Procedures for complying with accident notification requirements.

(e) Procedures for ensuring that the pilot in command knows that required airworthiness inspections have been made and that the aircraft has been approved for return to service in compliance with applicable maintenance requirements;

(f) Procedures for reporting and recording mechanical irregularities that come to the attention of the pilot in command before, during, and after completion of a flight;

(g) Procedures to be followed by the pilot in command for determining that mechanical irregularities or defects reported for previous flights have been corrected or that correction has been deferred;

(h) Procedures to be followed by the pilot in command to obtain maintenance, preventive maintenance, and servicing of the aircraft at a place where previous arrangements have not been made by the operator, when the pilot is authorized to so act for the operator;

(i) Procedures under § 135.179 for the release for, or continuation of, flight if any item of equipment required for the particular type of operation becomes inoperative or unserviceable en route;

(j) Procedures for refueling aircraft, eliminating fuel contamination, protecting from fire (including electrostatic protection), and supervising and protecting passengers during refueling;

(k) Procedures to be followed by the pilot in command in the briefing under § 135.117;

(l) Flight locating procedures, when applicable;

(m) Procedures for ensuring compliance with emergency procedures, including a list of the functions assigned each category of required crewmembers in connection with an emergency and emergency evacuation duties under § 135.123;

(n) En route qualification procedures for pilots, when applicable;

(o) The approved aircraft inspection program, when applicable;

(p) Procedures and instructions to enable personnel to recognize hazardous materials, as defined in Title 49 CFR, and if these materials are to be carried, stored, or handled, procedures and instructions for—

(1) Accepting shipment of hazardous material required by Title 49 CFR, to assure proper packaging, marking, labeling, shipping documents, compatibility of articles, and instructions on their loading, storage, and handling;

(2) Notification and reporting hazardous material incidents as required by Title 49 CFR; and

(3) Notification of the pilot in command when there are hazardous materials aboard, as required by Title 49 CFR;

(q) Procedures for the evacuation of persons who may need the assistance of another person to move expeditiously to an exit if an emergency occurs; and

(r) Other procedures and policy instructions regarding the certificate holder's operations, that are issued by the certificate holder.

§ 135.25 Aircraft requirements.

(a) Except as provided in paragraph (d) of this section, no certificate holder may operate an aircraft under this part unless that aircraft—

(1) Is registered as a civil aircraft of the United States and carries an appropriate and current airworthiness certificate issued under this chapter; and

(2) Is in an airworthy condition and meets the applicable airworthiness requirements of this chapter, including those relating to identification and equipment.

(b) Each certificate holder must have the exclusive use of a least one aircraft that meets the requirements for at least one kind of operation authorized in the certificate holder's operations specifications. In addition, for each kind of operation for which the certificate holder does not have the exclusive use of an aircraft, the certificate holder must have available for use under a written agreement (including arrangements for performing required maintenance) at least one aircraft that meets the requirements for that kind of operation. However, this paragraph does not prohibit the operator from using or authorizing the use of the aircraft for other than air taxi or commercial operations and does not require the certificate holder to have exclusive use of all aircraft that the certificate holder uses.

(c) For the purposes of paragraph (b) of this section, a person has exclusive use of an aircraft if that person has the sole possession, control, and use of it for flight, as owner, or has a written agreement (including arrangements for performing required maintenance), in effect when the aircraft is operated, giving the person that possession, control, and use for at least 6 consecutive months.

(d) A certificate holder may operate in common carriage, and for the carriage of mail, a civil aircraft which is leased or chartered to it without crew and is registered in a country which is a party to the Convention on International Civil Aviation if—

(1) The aircraft carries an appropriate airworthiness certificate issued by the country of registration and meets the registration and identification requirements of that country;

(2) The aircraft is of a type design which is approved under a U.S. type certificate and complies with all of the requirements of this chapter (14 CFR Chapter 1) that would be applicable to that aircraft were it registered in the United States, including the requirements which must be met for issuance of a U.S. standard airworthiness certificate (including type design conformity, condition for safe operation, and the noise, fuel venting, and engine emission requirements of this chapter), except that a U.S. registration certificate and a U.S. standard airworthiness certificate will not be issued for the aircraft;

(3) The aircraft is operated by U.S.- certificated airmen employed by the certificate holder; and

(4) The certificate holder files a copy of the aircraft lease or charter agreement with the FAA Aircraft Registry, Department of Transportation, 6400 South MacArthur Boulevard, Oklahoma City, Oklahoma (Mailing address: P.O. Box 25504, Oklahoma City, Oklahoma 73125).

§ 135.27 Business office and operations base.

(a) Each certificate holder shall maintain a principal business office.

(b) Each certificate holder shall, before establishing or changing the location of any business office or operations base, except a temporary operations base, notify in writing the FAA Flight Standards District Office charged with the overall inspection of the certificate holder.

(c) No certificate holder who establishes or changes the location of any business office or operations base, except a temporary operations base, may operate an aircraft under this part unless the certificate holder complies with paragraph (b) of this section.

§ 135.29 Use of business names.

No certificate holder may obtain an aircraft under this Part under a business name that is not on the certificate holder's operating certificate.

§ 135.31 Advertising.

No certificate holder may advertise or otherwise offer to perform operations subject to this Part that are not authorized by the certificate holder's operating certificate and operations specifications.

§ 135.33 Area limitations on operations.

(a) No person may operate an aircraft in a geographical area that is not specifically authorized by appropriate operations specifications issued under this Part.

(b) No person may operate an aircraft in a foreign country unless that person is authorized to do so by that country.

§ 135.35 Termination of operations.

Within 30 days after a certificate holder terminates operations under this Part, the operating certificate and operations specifications must be surrendered by the certificate holder to the FAA Flight Standards District Office charged with the overall inspection of the certificate holder.

§ 135.37 Management personnel required.

[(a) Each certificate holder, other than one who uses only one pilot in a certificate holder's operations,] must have enough qualified management personnel in the following or equivalent positions to ensure safety in its operations:

(1) Director of operations.

(2) Chief pilot.

(3) Director of maintenance.

(b) Upon application by the certificate holder, the Administrator may approve different positions or numbers of positions than those listed in paragraph (a) of this section for a particular operation if the certificate holder shows that it can perform its operations safely under the direction of fewer or different categories of management personnel.

(c) Each certificate holder shall—

(1) Set forth the duties, responsibilities, and authority of the personnel required by this section in the manual required by § 135.21;

(2) List in the manual required by § 135.21 the name of the person or persons assigned to those positions; and

(3) Within 10 working days, notify the FAA Flight Standards District Office charged with the overall inspection of the certificate holder of any change made in the assignment of persons to the listed positions.

§ 135.39 Management personnel qualifications.

(a) *Director of operations.* No person may serve as director of operations under § 135.37(a) unless that person knows the contents of the manual required by § 135.21, the operations specifications, the provisions of this Part and other applicable regulations necessary for the proper performance of the person's duties and responsibilities and:

(1) The director of operations for a certificate holder conducting any operations for which the pilot in command is required to hold an airline transport pilot certificate must—

(i) Hold or have held an airline transport pilot certificate; and

(ii) Have at least 3 years of experience as pilot in command of an aircraft operated under this Part, Part 121 or Part 127 of this chapter; or

(iii) Have at least 3 years of experience as director of operations with a certificate holder operating under this Part, Part 121 or Part 127 of this chapter.

(2) The director of operations for a certificate holder who is not conducting any operation for which the pilot in command is required to hold an airline transport pilot certificate must—

(i) Hold or have held a commercial pilot certificate; and

(ii) Have at least 3 years of experience as a pilot in command of an aircraft operated under this Part, Part 121 or Part 127 of this chapter; or

(iii) Have at least 3 years of experience as director of operations with a certificate holder operating under this Part, Part 121 or Part 127 of this chapter.

(b) *Chief pilot.* No person may serve as chief pilot under § 135.37(a) unless that person knows the contents of the manual required by § 135.21, the operations specifications, the provisions of this Part and other applicable regulations necessary for the proper performance of the person's duties, and:

(1) The chief pilot of a certificate holder conducting any operation for which the pilot in command is required to hold an airline transport pilot certificate must—

(i) Hold a current airline transport pilot certificate with appropriate ratings for at least one of the types of aircraft used; and

(ii) Have at least 3 years of experience as a pilot in command of an aircraft under this Part, Part 121 or Part 127 of this chapter.

(2) The chief pilot of a certificate holder who is not conducting any operation for which the pilot in command is required to hold an airline transport pilot certificate must—

[(i) Hold a current, commercial pilot certificate with an instrument rating. If an instrument rating is not required for the pilot in command under this part, the chief pilot must hold a current, commercial pilot certificate; and]

(ii) Have at least 3 years of experience as a pilot in command of an aircraft under this Part, Part 121 or Part 127 of this chapter.

(c) *Director of maintenance.* No person may serve as a director of maintenance under § 135.37(a) unless that person knows the maintenance sections of the certificate holder's manual, the operations specifications, the provisions of this Part and other applicable regulations necessary for the proper performance of the person's duties, and—

(1) Holds a mechanic certificate with both airframe and powerplant ratings; and

(2) Has at least 3 years of maintenance experience as a certificated mechanic on aircraft, including, at the time of appointment as director of maintenance, the recent experience requirements of § 65.83 of this chapter in the same category and class of aircraft as used by the certificate holder, or at least 3 years of experience with a certificated airframe repair station including 1 year in the capacity of approving aircraft for return to service.

(d) Deviations from this section may be authorized if the person has had equivalent aeronautical experience. The Chief of the Flight Standards Division in the region of the certificate holding district office may authorize a deviation for the director of operations, chief pilot, and the director of maintenance.

§ 135.41 Carriage of narcotic drugs, marihuana, and depressant or stimulant drugs or substances.

If the holder of a certificate issued under this Part allows any aircraft owned or leased by that holder to be engaged in any operation that the certificate holder knows to be in violation of § 91.12(a) of this chapter, that operation is a basis for suspending or revoking the certificate.

§ 135.43 Crewmember certificate: international operations: application and issue.

(a) This section provides for the issuance of a crewmember certificate to United States citizens who are employed by certificate holders as crewmembers on United States registered aircraft engaged in international air commerce. The purpose of the certificate is to facilitate the entry and clearance of those crewmembers into ICAO contracting states. They are issued under Annex 9, as amended, to the Convention on International Civil Aviation.

(b) An application for a crewmember certificate is made on FAA Form 8060-6 "Application for Crewmember Certificate," to the FAA Flight Standards District Office charged with the overall inspection of the certificate holder by whom the applicant is employed. The certificate is issued on FAA Form 8060-42, "Crewmember Certificate."

(c) The holder of a certificate issued under this section, or the certificate holder by whom the holder is employed, shall surrender the certificate for cancellation at the nearest FAA Flight Standards District Office or submit it for cancellation to the Airmen Certification Branch, AAC–260, P.O. Box 25082, Oklahoma City, Oklahoma 73125, at the termination of the holder's employment with that certificate holder.

Subpart B—Flight Operations

§ 135.61 General.

This subpart prescribes rules, in addition to those in Part 91 of this chapter, that apply to operations under this Part.

§ 135.63 Recordkeeping requirements.

(a) Each certificate holder shall keep at its principal business office or at other places approved by the Administrator, and shall make available for inspection by the Administrator the following—

(1) The certificate holder's operating certificate;

(2) The certificate holder's operations specifications;

(3) A current list of the aircraft used or available for use in operations under this Part and the operations for which each is equipped; and

(4) An individual record of each pilot used in operations under this Part, including the following information:

(i) The full name of the pilot.

(ii) The pilot certificate (by type and number) and ratings that the pilot holds.

(iii) The pilot's aeronautical experience in sufficient detail to determine the pilot's qualifications to pilot aircraft in operation under this Part.

(iv) The pilot's current duties and the date of the pilot's assignment to those duties.

(v) The effective date and class of the medical certificate that the pilot holds.

(vi) The date and result of each of the initial and recurrent competency tests and proficiency and route checks required by this Part and the type of aircraft flown during that test or check.

(vii) The pilot's flight time in sufficient detail to determine compliance with the flight time limitations of this Part.

(viii) The pilot's check pilot authorization, if any.

(ix) Any reaction taken concerning the pilot's release from employment for physical or professional disqualification.

(x) The date of the completion of the initial phase and each recurrent phase of the training required by this Part.

(b) Each certificate holder shall keep each record required by paragraph (a)(3) of this section for at least 6 months, and each record required by paragraph (a)(4) of this section for at least 12 months, after it is made.

(c) For multiengine aircraft, each certificate holder is responsible for the preparation and accuracy of a load manifest in duplicate containing information concerning the loading of the aircraft. The manifest must be prepared before each takeoff and must include—

(1) The number of passengers;

(2) The total weight of the loaded aircraft;

(3) The maximum allowable takeoff weight for that flight;

(4) The center of gravity limits;

(5) The center of gravity of the loaded aircraft, except that the actual center of gravity need not be computed if the aircraft is loaded according to a loading schedule or other approved method that ensures that the center of gravity of the loaded aircraft is within approved limits. In those cases, an entry shall be made on the manifest indicating that the center of gravity is within limits according to a loading schedule or other approved method;

(6) The registration number of the aircraft or flight number;

(7) The origin and destination; and

(8) Identification of crewmembers and their crew position assignments.

(d) The pilot in command of the aircraft for which a load manifest must be prepared shall carry a copy of the completed load manifest in the aircraft to its destination. The certificate holder shall keep copies of completed load manifest for at least 30 days at its principal operations base, or at another location used by it and approved by the Administrator.

§ 135.65 Reporting mechanical irregularities.

(a) Each certificate holder shall provide an aircraft maintenance log to be carried on board each aircraft for recording or deferring mechanical irregularities and their correction.

(b) The pilot in command shall enter or have entered in the aircraft maintenance log each mechanical irregularity that comes to the pilot's attention during flight time. Before each flight, the pilot in command shall, if the pilot does not already know, determine the status of each irregularity entered in the maintenance log at the end of the preceding flight.

(c) Each person who takes corrective action or defers action concerning a reported or observed failure or malfunction of an airframe, powerplant, propeller, rotor, or appliance, shall record the action taken in the aircraft maintenance log under the applicable maintenance requirements of this chapter.

(d) Each certificate holder shall establish a procedure for keeping copies of the aircraft maintenance log required by this section in the aircraft for access by appropriate personnel and shall include that procedure in the manual required by § 135.21.

§ 135.67 Reporting potentially hazardous meteorological conditons and irregularities of communications or navigation facilities.

[Whenever a pilot encounters a potentially hazardous meteorological condition or an irregularity in a ground communications or navigational facility in flight, the knowledge of which the pilot considers essential to the safety of other flights, the pilot shall notify an appropriate ground radio station as soon as practicable.]

§ 135.69 Restriction or suspension of operations: continuation of flight in an emergency.

(a) During operations under this Part, if a certificate holder or pilot in command knows of conditions, including airport and runway conditions, that are a hazard to safe operations, the certificate holder or pilot in command, as the case may be, shall restrict or suspend operations as necessary until those conditions are corrected.

(b) No pilot in command may allow a flight to continue toward any airport of intended landing under the conditions set forth in paragraph (a) of this section, unless in the opinion of the pilot in command, the conditions that are a hazard to safe operations may reasonably be expected to be corrected by the estimated time of arrival or, unless there is no safer procedure. In the latter event, the continuation toward that airport is an emergency situation under § 135.19.

§ 135.71 Airworthiness check.

The pilot in command may not begin a flight unless the pilot determines that the airworthiness inspections required by § 91.169 of this chapter, or § 135.419, whichever is applicable, have been made.

§ 135.73 Inspections and tests.

Each certificate holder and each person employed by the certificate holder shall allow the Administrator, at any time or place, to make inspections or tests (including en route inspections) to determine the holder's compliance with the Federal Aviation Act of 1958, applicable regulations, and the certificate holder's operating certificate, and operations specifications.

§ 135.75 Inspectors credentials: admission to pilots' compartment: forward observer's seat.

(a) Whenever, in performing the duties of conducting an inspection, an FAA inspector presents an Aviation Safety Inspector credential, FAA Form 110A, to the pilot in command of an aircraft operated by the certificate holder, the inspector must be given free and uninterrupted access to the pilot compartment of that aircraft. However, this paragraph does not limit the emergency authority of the pilot in command to exclude any person from the pilot compartment in the interest of safety.

(b) A forward observer's seat on the flight deck, or forward passenger seat with headset or speaker must be provided for use by the Administrator while conducting en route inspections. The suitability of the location of the seat and the headset or speaker for use in conducting en route inspections is determined by the Administrator.

§ 135.77 Responsibility for operational control.

Each certificate holder is responsible for operational control and shall list, in the manual required by § 135.21, the name and title of each person authorized by it to exercise operational control.

§ 135.79 Flight locating requirements.

(a) Each certificate holder must have procedures established for locating each flight, for which an FAA flight plan is not filed, that—

(1) Provide the certificate holder with at least the information required to be included in a VFR flight plan;

(2) Provide for timely notification of an FAA facility or search and rescue facility, if an aircraft is overdue or missing; and

(3) Provide the certificate holder with the location, date, and estimated time for reestablishing radio or telephone communications, if the flight will operate in an area where communications cannot be maintained.

(b) Flight locating information shall be retained at the certificate holder's principal place of business, or at other places designated by the certificate holder in the flight locating procedures, until the completion of the flight.

(c) Each certificate holder shall furnish the representative of the Administrator assigned to it with a copy of its flight locating procedures and any changes or additions, unless those procedures are included in a manual required under this Part.

§ 135.81 Informing personnel of operational information and appropriate changes.

Each certificate holder shall inform each person in its employment of the operations specifications that apply to that person's duties and responsibilities and shall make available to each pilot in the certificate holder's employ the following materials in current form:

(a) Airman's Information Manual (Alaska Supplement in Alaska and Pacific Chart Supplement in Pacific-Asia Regions) or a commercial publication that contains the same information.

(b) This Part and Part 91 of this chapter.

(c) Aircraft Equipment Manuals, and Aircraft Flight Manual or equivalent.

(d) For foreign operations, the International Flight Information Manual or a commercial publication that contains the same information concerning the pertinent operational and entry requirements of the foreign country or countries involved.

§ 135.83 Operating information required.

(a) The operator of an aircraft must provide the following materials, in current and appropriate form, accessible to the pilot at the pilot station, and the pilot shall use them:

(1) A cockpit checklist.

(2) For multiengine aircraft or for aircraft with retractable landing gear, an emergency cockpit checklist containing the procedures required by paragraph (c) of this section, as appropriate.

(3) Pertinent aeronautical charts.

(4) For IFR operations, each pertinent navigational en route, terminal area, and approach and letdown chart.

(5) For multiengine aircraft, one-engine-inoperative climb performance data and if the aircraft is approved for use in IFR or over-the-top operations, that data must be sufficient to enable the pilot to determine compilance with § 135.181(a)(2).

(b) Each cockpit checklist required by paragraph (a)(1) of this section must contain the following procedures: (1) Before starting engines; (2) Before takeoff; (3) Cruise; (4) Before landing; (5) After landing; (6) Stopping engines.

(c) Each emergency cockpit checklist required by paragraph (a)(2) of this section must contain the following procedures as appropiate:

(1) Emergency operation of fuel, hydraulic, electrical, and mechanical systems.

(2) Emergency operation of instruments and controls.

(3) Engine inoperative procedures.

(4) Any other emergency procedures necessary for safety.

§ 135.85 Carriage of persons without compliance with the passenger-carrying provisions of this Part.

The following persons may be carried aboard an aircraft without complying with the passenger-carrying requirements of this Part:

(a) A crewmember or other employee of the certificate holder.

(b) A person necessary for the safe handling of animals on the aircraft.

(c) A person necessary for the safe handling of hazardous materials (as defined in Subchapter C of Title 49 CFR).

(d) A person performing duty as a security or honor guard accompanying a shipment made by or under the authority of the U.S. Government.

(e) A military courier or a military route supervisor carried by a military cargo contract air carrier or commercial operator in operations under a military cargo contract, if that carriage is specifically authorized by the appropriate military service.

(f) An authorized representative of the Administrator conducting an en route inspection.

(g) A person, authorized by the Administrator, who is performing a duty connected with a cargo operation of the certificate holder.

§ 135.87 Carriage of cargo including carry-on baggage.

No person may carry cargo, including carry-on baggage, in or on any aircraft unless—

(a) It is carried in an approved cargo rack, bin, or compartment installed in or on the aircraft;

(b) It is secured by an approved means; or

(c) It is carried in accordance with each of the following:

(1) For cargo, it is properly secured by a safety belt or other tie-down having enough strength to eliminate the possibility of shifting under all normally anticipated flight and ground conditions, or for carry-on baggage, it is restrained so as to prevent its movement during air turbulence.

(2) It is packaged or covered to avoid possibly injury to occupants.

(3) It does not impose any load on seats or on the floor structure that exceeds the load limitation for those components.

(4) It is not located in a position that obstructs the access to, or use of, any required emergency or regular exit, or the use of the aisle between the crew and the passenger compartment, or located in a position that obscures any passenger's view of the "seat belt" sign, "no smoking" sign, or any required exit sign, unless an auxiliary sign or other approved means for proper notification of the passengers is provided.

(5) It is not carried directly above seated occupants.

(6) It is stowed in compliance with this section for takeoff and landing.

(7) For cargo only operations, paragraph (c)(4) of this section does not apply if the cargo is loaded so that at least one emergency or regular exit is available to provide all occupants of the aircraft a means of unobstructed exit from the aircraft if an emergency occurs.

(d) Each passenger seat under which baggage is stowed shall be fitted with a means to prevent articles of baggage stowed under it from sliding under crash impacts severe enough to induce the ultimate inertia forces specified in the emergency landing condition regulations under which the aircraft was type certificated.

(e) When cargo is carried in cargo compartments that are designed to require the physical entry of a crewmember to extinguish any fire that may occur during flight, the cargo must be loaded so as to allow a crewmember to effectively reach all parts of the compartment with the contents of a hand fire extinguisher.

§ 135.89 Pilot requirements: use of oxygen.

(a) *Unpressurized aircraft.* Each pilot of an unpressurized aircraft shall use oxygen continuously when flying—

(1) At altitudes above 10,000 feet through 12,000 feet MSL for that part of the flight at those altitudes that is of more than 30 minutes duration and

(2) Above 12,000 feet MSL.

(b) *Pressurized aircraft.*

(1) Whenever a pressurized aircraft is operated with the cabin pressure altitude more than 10,000 feet MSL, each pilot shall comply with paragraph (a) of this section.

(2) Whenever a pressurized aircraft is operated at altitudes above 25,000 feet through 35,000 feet MSL unless each pilot has an approved quick-donning type oxygen mask—

(i) At least one pilot at the controls shall wear, secured and sealed, an oxygen mask that either supplies oxygen at all times or automatically supplies oxygen whenever the cabin pressure altitude exceeds 12,000 feet MSL; and

(ii) During that flight, each other pilot on flight deck duty shall have an oxygen mask, connected to an oxygen supply, located so as to allow immediate placing of the mask on the pilot's face sealed and secured for use.

(3) Whenever a pressurized aircraft is operated at altitudes above 35,000 feet MSL, at least one pilot at the controls shall wear, secured and sealed, an oxygen mask required by paragraph (2)(i) of this paragraph.

(4) If one pilot leaves a pilot duty station of an aircraft when operating at altitudes above 25,000 feet MSL, the remaining pilot at the controls shall put on and use an approved oxygen mask until the other pilot returns to the pilot duty station of the aircraft.

§ 135.91 Oxygen for medical use by passengers.

(a) Except as provided in paragraphs (d) and (e) of this section, no certificate holder may allow the carriage or operation of equipment for the storage, generation or dispensing of medical oxygen unless the unit to be carried is constructed so that all valves, fittings, and gauges are protected from damage during that carriage or operation and unless the following conditions are met—

(1) The equipment must be—

(i) Of an approved type or in conformity with the manufacturing, packaging, marking, labeling and maintenance requirements of Title 49 CFR Parts 171, 172, and 173, except § 173.24(a)(1);

(ii) When owned by the certificate holder, maintained under the certificate holder's approved maintenance program;

(iii) Free of flammable contaminants on all exterior surfaces; and

(iv) Appropriately secured.

(2) When the oxygen is stored in the form of a liquid, the equipment must have been under the certificate holder's approved maintenance program since its purchase new or since the storage container was last purged.

(3) When the oxygen is stored in the form of a compressed gas as defined in Title 49 CFR § 173.300(a)—

(i) When owned by the certificate holder, it must be maintained under its approved maintenance program; and

(ii) The pressure in any oxygen cylinder must not exceed the rated cylinder pressure.

(4) The pilot in command must be advised when the equipment is on board, and when it is intended to be used.

(5) The equipment must be stowed, and each person using the equipment must be seated, so as not to restrict access to or use of any required emergency or regular exit, or of the aisle in the passenger compartment.

(b) No person may smoke and no certificate holder may allow any person to smoke within 10 feet of oxygen storage and dispensing equipment carried under paragraph (a) of this section.

(c) No certificate holder may allow any person other than a person trained in the use of medical oxygen equipment to connect or disconnect oxygen bottles or any other ancillary component while any passenger is aboard the aircraft.

(d) Paragraph (a)(1)(i) of this section does not apply when that equipment is furnished by a professional or medical emergency service for use on board an aircraft in a medical emergency when no other practical means of transportation (including any other properly equipped certificate holder) is reasonably available and the person carried under the medical emergency is accompanied by a person trained in the use of medical oxygen.

(e) Each certificate holder who, under the authority of paragraph (a)(1)(i) of this sec-deviates from paragraph (a)(1)(i) of this section under a medical emergency shall, within 10 days, excluding Saturdays, Sundays, and Federal holidays, after the deviation, send to the FAA Flight Standards District Office charged with the overall inspection of the certificate holder a complete report of the operation involved, including a description of the deviation and the reasons for it.

§ 135.93 Autopilot: minimum altitudes for use.

(a) Except as provided in paragraphs (b), (c), and (d) of this section, no person may use an autopilot at an altitude above the terrain which is less than 500 feet or less than twice the maximum altitude loss specified in the approved Aircraft Flight Manual or equivalent for a malfunction of the autopilot, whichever is higher.

(b) When using an instrument approach facility other than ILS, no person may use an autopilot at an altitude above the terrain that is less than 50 feet below the approved minimum descent altitude for that procedure, or less than twice the maximum loss specified in the approved Airplane Flight Manual or equivalent for a malfunction of the autopilot under approach conditions, whichever is higher.

(c) For ILS approaches, when reported weather conditions are less than the basic weather conditions in § 91.105 of this chapter, no person may use an autopilot with an approach coupler at an altitude above the terrain that is less than 50 feet above the terrain, or the maximum altitude loss specified in the approved Airpline Flight Manual or equivalent for the malfunction of the autopilot with approach coupler, whichever is higher.

(d) Without regard to paragraphs (a), (b), or (c) of this section, the Administrator may issue operations specifications to allow the use to touchdown, of an approved flight control guidance system with automatic capability, if—

(1) The system does not contain any altitude loss (above zero) specified in the approved Aircraft Flight Manual or equivalent for malfunction of the autopilot with approach coupler; and

(2) The Administrator finds that the use of the system to touchdown will not otherwise adversely affect the safety standards of this section.

(e) This section does not apply to the operations conducted in rotorcraft.

§ 135.95 Airmen: limitations on use of services.

No certificate holder may use the services of any person as a airman unless the person performing those services—

(a) Holds an appropriate and current airman certificate; and

(b) Is qualified, under this chapter, for the operation for which the person is to be used.

§ 135.97 Aircraft and facilities for recent flight experience.

Each certificate holder shall provide aircraft and facilities to enable each of its pilots to maintain and demonstrate the pilot's ability to conduct all operations for which the pilot is authorized.

§ 135.99 Composition of flight crew.

(a) No certificate holder may operate an aircraft with less than the minimum flight crew specified in the aircraft operating limitations or the Aircraft Flight Manual for that aircraft and required by this Part for the kind of operation being conducted.

(b) No certificate holder may operate an aircraft without a second in command if that aircraft has a passenger seating configuration, excluding any pilot seat, of ten seats or more.

[§135.100 Flight crewmember duties.

[(a) No certificate holder shall require, nor may any flight crewmember perform, any duties during a critical phase of flight except those duties required for the safe operation of the aircraft. Duties such as company required calls made for such nonsafety related purposes as ordering galley supplies and confirming passenger connections, announcements made to passengers promoting the air carrier or pointing out sights of interest, and filling out company payroll and related records are not required for the safe operation of the aircraft.

[(b) No flight crewmember may engage in, nor may any pilot in command permit, any activity during a critical phase of flight which could distract any flight crewmember from the performance of his or her duties or which could interfere in any way with the proper conduct of those duties. Activities such as eating meals, engaging in nonessential conversations within the cockpit and nonessential communications between the cabin and cockpit crews, and reading publications not related to the proper conduct of the flight are not required for the safe operation of the aircraft.

[(c) For the purposes of this section, critical phases of flight includes all ground operations involving taxi, takeoff and landing, and all other flight operations conducted below 10,000 feet, except cruise flight.

[NOTE—Taxi is defined as "movement of an airplane under its own power on the surface of an airport."]

§ 135.101 Second in command required in IFR conditions.

Except as provided in §§ 135.103 and 135.105, no person may operate an aircraft carrying passengers in IFR conditions, unless there is a second in command in the aircraft.

§ 135.103 Exception to second in command requirement: IFR operations.

The pilot in command of an aircraft carrying passengers may conduct IFR operations without a second in command under the following conditions:

(a) A takeoff may be conducted under IFR conditions if the weather reports or forecasts, or any combination of them, indicate that the weather along the planned route of flight allows flight under VFR within 15 minutes flying time, at normal cruise speed, from the takeoff airport.

(b) En route IFR may be conducted if unforecast weather conditions below the VFR minimums of this chapter are encountered on a flight that was planned to be conducted under VFR.

(c) An IFR approach may be conducted if, upon arrival at the destination airport, unforecast weather conditions do not allow an approach to be completed under VFR.

(d) When IFR operations are conducted under this section:

(1) The aircraft must be properly equipped for IFR operations under this Part.

(2) The pilot must be authorized to conduct IFR operations under this Part.

(3) The flight must be conducted in accordance with an ATC IFR clearance.

IFR operations without a second in command may not be conducted under this section in an aircraft requiring a second in command under § 135.99.

§ 135.105 Exception to second in command requirement: approval for use of autopilot system.

(a) Except as provided in §§ 135.99 and 135.111, unless two pilots are required by this chapter for operations under VFR, a person may operate an aircraft without a second in command, if it is equipped with an operative approved autopilot system and the use of that system is authorized by appropriate operations specifications. No certificate holder may use any person, nor may any person serve, as a pilot in command under this section of an aircraft operated by a Commuter Air Carrier (as defined in § 298.2 of this title) in passenger-carrying operations unless that person has at least 100 hours pilot in command flight time in the make and model of aircraft to be flown and has met all other applicable requirements of this Part.

(b) The certificate holder may apply for an amendment of its operations specifications to authorize the use of an autopilot system in place of a second in command.

(c) The Administrator issues an amendment to the operations specifications authorizing the use of an autopilot system, in place of a second in command, if—

(1) The autopilot is capable of operating the aircraft controls to maintain flight and maneuver it about the three axes; and

(2) The certificate holder shows, to the satisfaction of the Administrator, that operations using the autopilot system can be conducted safely and in compliance with this Part.

The amendment contains any conditions or limitations on the use of the autopilot system that the Administrator determines are needed in the interest of safety.

§ 135.107 Flight attendant crewmember requirement.

No certificate holder may operate an aircraft that has a passenger seating configuration, excluding any pilot seat, of more than 19 unless there is a flight attendant crewmember on board the aircraft.

§ 135.109 Pilot in command or second in command: designation required.

(a) Each certificate holder shall designate a—

(1) Pilot in command for each flight; and

(2) Second in command for each flight requiring two pilots.

(b) The pilot in command, as designated by the certificate holder, shall remain the pilot in command at all times during that flight.

§ 135.111 Second in command required in Category II operations.

No person may operate an aircraft in a Category II operation unless there is a second in command of the aircraft.

§ 135.113 Passenger occupancy of pilot seat.

No certificate holder may operate an aircraft type certificate after October 15, 1971, that has a passenger seating configuration, excluding any pilot seat, of more than eight seats if any person other than the pilot in command, a second in command, a company check airman, or an authorized representative of the Administrator, the National Transportation Safety Board, or the United States Postal Service occupies a pilot seat.

§ 135.115 Manipulation of controls.

No pilot in command may allow any person to manipulate the flight controls of an aircraft during flight conducted under this Part, nor may any person manipulate the controls during such flight unless that person is—

(a) A pilot employed by the certificate holder and qualified in the aircraft; or

(b) An authorized safety representative of the Administrator who has the permission of the pilot in command, is qualified in the aircraft, and is checking flight operations.

§ 135.117 Briefing of passengers before flight.

(a) Before each takeoff each pilot in command of an aircraft carrying passengers shall ensure that all passengers have been orally briefed on—

(1) Smoking. [Each passenger shall be briefed on when, where, and under what conditions smoking is prohibited (including, but not limited to, the pertinent requirements of Part 252 of this title). This briefing shall include a statement that the Federal Aviation Regulations require passenger compliance

with the lighted passenger information signs (if such signs are required) and posted placards. The briefing shall also include a statement (if the aircraft is equipped with a lavatory) that Federal law prohibits tampering with, disabling, or destroying any smoke detector installed in an aircraft lavatory.]

(2) Use of seat belts;

(3) The placement of seat backs in an upright position before takeoff and landing;

(4) Location and means for opening the passenger entry door and emergency exits;

(5) Location of survival equipment;

(6) If the flight involves extended overwater operation, ditching procedures and the use of required flotation equipment;

(7) If the flight involves operations above 12,000 feet MSL, the normal and emergency use of oxygen; and

(8) Location and operation of fire extinguishers.

(b) Before each takeoff the pilot in command shall ensure that each person who may need the assistance of another person to move expeditiously to an exit if an emergency occurs and that person's attendant, if any, has received a briefing as to the procedures to be followed if an evacuation occurs. This paragraph does not apply to a person who has been given a briefing before a previous leg of a flight in the same aircraft.

(c) The oral briefing required by paragraph (a) of this section shall be given by the pilot in command or a crewmember.

(d) Notwithstanding the provisions of paragraph (c) of this section, for aircraft certificated to carry 19 passengers or less, the oral briefing required by paragraph (a) of this section shall be given by the pilot in command, a crewmember, or other qualified person designated by the certificate holder and approved by the Administrator.

(e) The oral briefing required by paragraph (a) shall be supplemented by printed cards which must be carried in the aircraft in locations convenient for the use of each passenger. The cards must—

(1) Be appropriate for the aircraft on which they are to be used;

(2) Contain a diagram of, and method of operating, the emergency exits; and

(3) Contain other instructions necessary for the use of emergency equipment on board the aircraft.

(f) The briefing required by paragraph (a) may be delivered by means of an approved recording playback device that is audible to each passenger under normal noise levels.

§ 135.119 Prohibition against carriage of weapons.

No person may, while on board an aircraft being operated by a certificate holder, carry on or about that person a deadly or dangerous weapon, either concealed or unconcealed. This section does not apply to—

(a) Officials or employees of a municipality or a State, or of the United States, who are authorized to carry arms; or

(b) Crewmembers and other persons authorized by the certificate holder to carry arms.

§ 135.121 Alcoholic beverages.

(a) No person may drink any alcoholic beverage aboard an aircraft unless the certificate holder operating the aircraft has served that beverage.

(b) No certificate holder may serve any alcoholic beverage to any person aboard its aircraft if that person appears to be intoxicated.

(c) No certificate holder may allow any person to board any of its aircraft if that person appears to be intoxicated.

§ 135.123 Emergency and emergency evacuation duties.

(a) Each certificate holder shall assign to each required crewmember for each type of aircraft as appropriate, the necessary functions to be

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performed in an emergency or in a situation requiring emergency evacuation. The certificate holder shall ensure that those functions can be practicably accomplished, and will meet any reasonably anticipated emergency including incapacitation of individual crewmembers or their inability to reach the passenger cabin because of shifting cargo in combination cargo-passenger aircraft.

(b) The certificate holder shall describe in the manual required under § 135.21 the functions of each category of required crewmembers assigned under paragraph (a) of this section.

§ 135.125 Airplane security.

Certificate holders conducting operations under this part shall comply with the applicable security requirements in Part 108 of this chapter.

[§ 135.127 Passenger Information.]

[(a) The no smoking signs required by § 135.177(a)(3) of this part must be turned on:

[(1) during flight time on flight segments which are scheduled in the current North American Edition of the Official Airline Guide to be 2 hours or less in duration, except those flight segments between a point in the United States and a point in another country; or

[(2) on flight segments other than those described in paragraph (a)(1) of this section, for each takeoff and landing, and at any other time considered necessary by the pilot in command.

[(b) No person may smoke while a no smoking sign is lighted, except that the pilot in command may authorize smoking on the flight deck (if it is physically separated from the passenger cabin) except during takeoff and landing.

[(c) No person may smoke in any aircraft lavatory.

[(d) After December 31, 1988, no person may operate an aircraft with a lavatory equipped with a smoke detector unless there is in that lavatory a sign or placard which reads: "Federal law provides for a penalty of up to $2,000 for tampering with the smoke detector installed in this lavatory."

[(e) The provisions of paragraph (a)(1) of this section shall cease to be effective on April 24, 1990.]

Subpart C—Aircraft and Equipment

§ 135.141 Applicability.

This subpart prescribes aircraft and equipment requirements for operations under this part. The requirements of this subpart are in addition to the aircraft and equipment requirements of Part 91 of this chapter. However, this part does not require the duplication of any equipment required by this chapter.

§ 135.143 General requirements.

(a) No person may operate an aircraft under this part unless that aircraft and its equipment meet the applicable regulations of this chapter.

(b) Except as provided in § 135.179, no person may operate an aircraft under this part unless the required instruments and equipment in it have been approved and are in an operable condition.

(c) ATC transponder equipment installed within the time periods indicated below must meet the performance and environmental requirements of the following TSO's.

(1) *Through January 1, 1992*:

(i) Any class of TSO-C74b or any class of TSO-C74c as appropriate, provided that the equipment was manufactured before January 1, 1990; or

(ii) The appropriate class of TSO-C112 (Mode S).

(2) *After January 1, 1992:* The appropriate class of TSO-C112 (Mode S). For purposes of paragraph (c)(2) of this section, "installation" does not include—

(i) Temporary installation of TSO-C74b or TSO-C74c substitute equipment, as appropriate, during maintenance of the permanent equipment;

(ii) Reinstallation of equipment after temporary removal for maintenance; or

(iii) For fleet operations, installation of equipment in a fleet aircraft after removal of the equipment for maintenance from another aircraft in the same operator's fleet.

§ 135.145 Aircraft proving tests.

(a) No certificate holder may operate a turbojet airplane, or an aircraft for which two pilots are required by this chapter for operations under VFR, if it has not previously proved that aircraft or an aircraft of the same make and similar design in any operation under this Part unless, in addition to the aircraft certification tests, at least 25 hours of proving tests acceptable to the Administrator have been flown by that certificate holder including—

(1) Five hours of night time, if night flights are to be authorized;

(2) Five instrument approach procedures under simulated or actual instrument weather conditions, if IFR flights are to be authorized; and

(3) Entry into a representative number of en route airports as determined by the Administrator.

(b) No certificate holder may carry passengers in an aircraft during proving tests, except those needed to make the tests and those designated by the Administrator to observe the tests. However, pilot flight training may be conducted during the proving tests.

(c) For the purposes of paragraph (a) of this section, an aircraft is not considered to be of similar design if an alteration includes—

(1) The installation of powerplants other than those of a type similar to those with which it is certificated; or

(2) Alterations to the aircraft or its components that materially affect flight characteristics.

(d) The Administrator may authorize deviations from this section if the Administrator finds that special circumstances make full compliance with this section necessary.

§ 135.147 Dual controls required.

No person may operate an aircraft in operations requiring two pilots unless it is equipped with functioning dual controls. However, if the aircraft type certification operating limitations do not require two pilots, a throwover control wheel may be used in place of two control wheels.

§ 135.149 Equipment requirements: general.

No person may operate an aircraft unless it is equipped with—

(a) A sensitive altimeter that is adjustable for barometric pressure;

(b) Heating or deicing equipment for each carburetor or, for a pressure carburetor, an alternate air source;

(c) For turbojet airplanes, in addition to two gyroscopic bank-and-pitch indicators (artificial horizons) for use at the pilot stations, a third indicator that—

(1) Is powered from a source independent of the aircraft's electrical generating system;

(2) Continues reliable operation for at least 30 minutes after total failure of the aircraft's electrical generating systems;

(3) Operates independently of any other attitude indicating system;

(4) Is operative without selection after total failure of the aircraft's electrical generating system;

(5) Is located on the instrument panel in a position that will make it plainly visible to, and useable by, any pilot at the pilot's station; and

(6) Is appropriately lighted during all phases of operation;

(d) For aircraft having a passenger seating configuration, excluding any pilots seat, of more than 19, a public address system and a crewmember interphone system, approved under § 21.305 of this chapter, which meet §§ 121.318 and 121.319, respectively, of this chapter; and

(e) For turbine powered aircraft, any other equipment as the Administrator may require.

§ 135.151 Cockpit voice recorders.

(a) After October 11, **[**1991**]**, no person may operate a multiengine, turbine-powered airplane or rotorcraft having a passenger seating configuration of six or more and for which two pilots are required by certification or operating rules unless it is equipped with an approved cockpit voice recorder that:

(1) Is installed in compliance with Part 23.1457 (a) (1) and (2), (b), (c), (d), (e), (f), and (g); § 25.1457 (a) (1) and (2), (b), (c), (d), (e), (f), and (g); § 27.1457 (a) (1) and (2), (b), (c), (d), (e), (f), and (g); § 29.1457 (a) (1) and (2), (b), (c), (d), (e), (f), and (g); of this chapter, as applicable; and

[(2) Is operated continuously from the use of the check list before the flight to completion of the final check list at the end of the flight.

[(b) After October 11, 1991, no person may operate a multiengine, turbine-powered airplane or rotorcraft having a passenger seating configuration of 20 or more seats unless it is equipped with an approved cockpit voice recorder that—

[(1) Is installed in compliance with § 23.1457, § 25.1457, § 27.1457 or § 29.1457 of this chapter, as applicable; and

[(2) Is operated continuously from the use of the check list before the flight to completion of the final check list at the end of the flight.]

(c) In the event of an accident, or occurrence requiring immediate notification of the National Transportation Safety Board which results in termination of the flight, the certificate holder shall keep the recorded information for at least 60 days or, if requested by the Administrator or the Board, for a longer period. Information obtained from the record may be used to assist in determining the cause of accidents or occurrences in connection with investigations. The Administrator does not use the record in any civil penalty or certificate action.

[(d)] For those aircraft equipped to record the uninterrupted audio signals received by a boom or a mask microphone the flight crewmembers are required to use the boom microphone below 18,000 feet mean sea level. No person may operate a large turbine engine powered airplane manufactured after October 11, 1991, or on which a cockpit vocie recorder has been installed after October 11, 1991, unless it is equipped to record the uninterrupted audio signal received by a boom or mask microphone in accordance with § 25.1457(c)(5) of this chapter.

[(e)] In complying with this section, an approved cockpit voice recorder having an erasure feature may be used, so that during the operation of the recorder, information:

[(1) Recorded in accordance with paragraph (a) of this section and recorded more than 15 minutes earlier; or

[(2) Recorded in accordance with paragraph (b) of this section and recorded more than 30 minutes earlier; may be erased or otherwise obliterated.]

[§ 135.152 Flight recorders.]

[(a) No person may operate a multiengine, turbine-powered airplane or rotorcraft having a passenger seating configuration, excluding any pilot seat, of 10 to 19 seats, that is brought onto the U.S. register after October 11, 1991, unless it is equipped with one or more approved flight recorders that utilize a digital method of recording and storing data, and a method of readily retrieving that data from the storage medium. The parameters specified in Appendix B or C, as applicable, of this part must be recorded within the range, accuracy, resolution, and recording intervals as specified. The recorder shall retain no less than 8 hours of aircraft operation.

[(b) After October 11, 1991, no person may operate a multiengine, turbine-powered airplane having a passenger seating configuration of 20 to 30 seats or a multiengine, turbine-powered rotorcraft having a passenger seating configuration of 20 or more seats unless it is equipped with one or more approved flight recorders that utilize a digital method of recording and storing data, and a method of readily retrieving that data from the storage medium. The parameters in Appendix D or E of this part, as applicable, that are set forth below, must be recorded within the ranges, accuracies, resolutions, and sampling intervals as specified:

[(1) Except as provided in paragraph (b)(3) of this section for aircraft type certificated before October 1, 1969, the following parameters must be recorded:

[(i) Time;

[(ii) Altitude;

[(iii) Airspeed;

[(iv) Vertical acceleration;

[(v) Heading;

[(vi) Time of each radio transmission to or from air traffic control;

[(vii) Pitch attitude;

[(viii) Roll attitude;

[(ix) Longitudinal acceleration;

[(x) Control column or pitch control surface position; and

[(xi) Thrust of each engine.

[(2) Except as provided in paragraph (b)(3) of this section for aircraft type certificated after September 30, 1969, the following parameters must be recorded:

[(i) Time;

[(ii) Altitude;

[(iii) Airspeed;

[(iv) Vertical acceleration;

[(v) Heading;

[(vi) Time of each radio transmission either to or from air traffic control;

[(vii) Pitch attitude;

[(viii) Roll attitude;

[(ix) Longitudinal acceleration;

[(x) Pitch trim position;

[(xi) Control column or pitch control surface position;

[(xii) Control wheel or lateral control surface position;

[(viii) Rudder pedal or yaw control surface position;

[(xiv) Thrust of each engine;

[(xv) Position of each thrust reverser;

[(xvi) Trailing edge flap or cockpit flap control position; and

[(xvii) Leading edge flap or cockpit flap control position.

[(3) For aircraft manufactured after October 11, 1991, all of the parameters listed in Appendix D or E of this part, as applicable, must be recorded.

[(c) Whenever a flight recorder required by this section is installed, it must be operated continuously from the instant the airplane begins the takeoff roll or the rotorcraft begins the lift-off until the airplane has completed the landing roll or the rotorcraft has landed at its destination.

[(d) Except as provided in paragraph (c) of this section, and except for recorded data erased as authorized in this paragraph, each certificate holder shall keep the recorded data prescribed in paragraph (a) of this section until the aircraft has been operating for at least 8 hours of the operating time specified in paragraph (c) of this section. In addition, each certificate holder shall keep the recorded data prescribed in paragraph (b) of this section for an airplane until the airplane has been operating for at least 25 hours, and for a rotorcraft until the rotorcraft has been operating for at least 10 hours, of the operating time specified in paragraph (c) of this section. A total of 1 hour of recorded data may be erased for the purpose of testing the flight recorder or the flight recorder system. Any erasure made in accordance with this paragraph must be of the oldest recorded data accumulated at the time of testing. Except as provided in paragraph (c) of this section, no record need be kept more than 60 days.

[(e) In the event of an accident or occurrence that requires that immediate notification of the National Transportation Safety Board under 49 CFR Part 830 of its regulations and that results in termination of the flight, the certificate holder shall remove the recording media from the aircraft and keep the recorded data required by paragraphs (a) and (b) of this section for at least 60 days or for a longer period upon request of the Board or the Administrator.

[(f) Each flight recorder required by this section must be installed in accordance with the requirements of §§ 23.1459, 25.1459, 27.1459, or 29.1459, as appropriate, of this chapter. The correlation required by paragraph (c) of §§ 23.1459, 25.1459, 27.1459, or 29.1459, as appropriate, of this chapter need be established only on one aircraft of a group of aircraft:

[(1) That are of the same type;

[(2) On which the flight recorder models and their installations are the same; and

[(3) On which there are no differences in the type design with respect to the installation of the first pilot's instruments associated with the flight recorder. The most recent instrument calibration, including the recording medium from which this calibration is derived, and the recorder correlation must be retained by the certificate holder.

[(g) Each flight recorder required by this section that records the data specified in paragraphs (a) and (b) of this section must have an approved device to assist in locating that recorder under water.]

§ 135.153 Ground proximity warning system.

No person may operate a turbojet airplane having a passenger seating configuration, excluding any pilot seat, of 10 seats or more, unless it is equipped with—

(a) A ground proximity warning system that meets § 37.201 of this chapter; or

(b) A system that conveys warnings of excessive closure rates with the terrain and any deviations below glide slope by visual and audible means. This system must—

(1) Be approved by the Director of Flight Operations; and

(2) Have a means of alerting the pilot when a malfunction occurs in the system.

(c) For the system required by this section, the Airplane Flight Manual shall contain—

(1) Appropriate procedures for—

(i) The use of the equipment;

(ii) Proper flight crew action with respect to the equipment; and

(iii) Deactivation for planned abnormal and emergency conditions; and

(2) An outline of all input sources that must be operating.

(d) No person may deactivate a system required by this section except under procedures in the Airplane Flight Manual.

(e) Whenever a system required by this section is deactivated, an entry shall be made in the airplane maintenance record that includes the date and time of deactivation.

(f) For a system required by paragraph (b) of this section, procedures acceptable to the FAA Flight Standards District Office charged with the overall inspection of the certificate holder shall be established by the certificate holder to ensure that the performance of the system can be appropriately monitored.

§ 135.155 Fire extinguishers: passenger-carrying aircraft.

No person may operate an aircraft carrying passengers unless it is equipped with hand fire extinguishers of an approved type for use in crew and passenger compartments as follows—

(a) The type and quantity of extinguishing agent must be suitable for all the kinds of fires likely to occur;

(b) At least one hand fire extinguisher must be provided and conveniently located on the flight deck for use by the flight crew; and

(c) At least one hand fire extinguisher must be conveniently located in the passenger compartment of each aircraft having a passenger seating configuration, excluding any pilot seat, of at least 10 seats but less than 31 seats.

§ 135.157 Oxygen equipment requirements.

(a) *Unpressurized aircraft.* No person may operate an unpressurized aircraft at altitudes prescribed in this section unless it is equipped with enough oxygen dispensers and oxygen to supply the pilots under § 135.89(a) and to supply, when flying—

(1) At altitudes above 10,000 feet through 15,000 feet MSL, oxygen to at least 10 percent of the occupants of the aircraft, other than the pilots, for that part of the flight at those altitudes that is of more than 30 minutes duration; and

(2) Above 15,000 feet MSL oxygen to each occupant of the aircraft other than the pilots.

(b) *Pressurized aircraft.* No person may operate a pressurized aircraft—

(1) At altitudes above 25,000 feet MSL, unless at least a 10-minute supply of supplemental oxygen is available for each occupant of the aircraft, other than the pilots, for use when a descent is necessary due to loss of cabin pressurization; and

(2) Unless it is equipped with enough oxygen dispensers and oxygen to comply with paragraph (a) of this section whenever the cabin pressure altitude exceeds 10,000 feet MSL and, if the cabin pressurization fails, to comply with § 135.89(a) or to provide a 2-hour supply for each pilot, whichever is greater, and to supply when flying—

(i) At altitudes above 10,000 feet through 15,000 feet MSL, oxygen to at least 10 percent of the occupants of the aircraft, other than the pilots, for that part of the flight at those altitudes that is of more than 30 minutes duration; and

(ii) Above 15,000 feet MSL, oxygen to each occupant of the aircraft, other than the pilots, for one hour unless, at all times during flight above that altitude, the aircraft can safely descend to 15,000 feet MSL within four minutes, in which case only a 30-minute supply is required.

(c) The equipment required by this section must have a means—

(1) To enable the pilots to readily determine, in flight, the amount of oxygen available in each source of supply and whether the oxygen is being delivered to the dispensing units; or

(2) In the case of individual dispensing units, to enable each user to make those determinations with respect to that person's oxygen supply and delivery; and

(3) To allow the pilots to use undiluted oxygen at their discretion at altitudes above 25,000 feet MSL.

§ 135.158 Pitot heat indication systems.

(a) Except as provided in paragraph (b) of this section, after April 12, 1981, no person may operate a transport category airplane equipped with a flight instrument pitot heating system unless the airplane is also equipped with an operable pitot heat indication system that complies with § 25.1326 of this chapter in effect on April 12, 1978.

(b) A certificate holder may obtain an extension of the April 12, 1981, compliance date specified in paragraph (a) of this section, but not beyond April 12, 1983, from the Director of Flight Operations if the certificate holder—

(1) Shows that due to circumstances beyond its control it cannot comply by the specified compliance date; and

(2) Submits by the specified compliance date a schedule for compliance, acceptable to the Director, indicating that compliance will be achieved at the earliest practicable date.

§ 135.159 Equipment requirements: carrying passengers under VFR at night or under VFR over-the-top conditions.

No person may operate an aircraft carrying passengers under VFR at night or under VFR over-the-top unless it is equipped with—

(a) A gyroscopic rate-of-turn indicator except on the following aircraft:

(1) Helicopters with a third attitude instrument system usable through flight attitudes of ±80 degrees of pitch and ±120 degrees of roll and installed in accordance with §29.1303(g) of this chapter.

(2) Helicopters with a maximum certificated takeoff weight of 6,000 pounds or less.

(b) A slip skid indicator.

(c) A gyroscopic bank-and-pitch indicator.

(d) A gyroscopic direction indicator.

(e) A generator or generators able to supply all probable combinations of continuous in-flight electrical loads for required equipment and for recharging the battery.

(f) For night flights—

(1) An anticollision light system;

(2) Instrument lights to make all instruments, switches, and gauges easily readable, the direct rays of which are shielded from the pilot's eyes; and

(3) A flashlight having at least two size "D" cells or equivalent.

(g) For the purpose of paragraph (e) of this section, a continuous in-flight electrical load includes one that draws current continuously during flight, such as radio equipment, electrically driven instruments and lights, but does not include occasional intermittent loads.

(h) Notwithstanding provisions of paragraphs (b), (c), and (d), helicopters having a maximum certificated takeoff weight of 6,000 pounds or less may be operated until January 6, 1988, under visual flight rules at night without a slip skid indicator, a gyroscopic bank-and-pitch indicator, or a gyroscopic direction indicator.

§ 135.161 Radio and navigational equipment: carrying passengers under VFR at night or under VFR over-the-top.

(a) No person may operate an aircraft carrying passengers under VFR at night, or under VFR over-the-top, unless it has two-way communications equipment able, at least in flight, to transmit to, and receive from, ground facilities 25 miles away.

(b) No person may operate an aircraft carrying passengers under VFR over-the-top unless it has radio navigational equipment able to receive radio signals from the ground facilities to be used.

(c) No person may operate an airplane carrying passengers under VFR at night unless it has radio navigational equipment able to receive radio signals from the ground facilities to be used.

§ 135.163 Equipment requirements: aircraft carrying passengers under IFR.

No person may operate an aircraft under IFR, carrying passengers, unless it has—

(a) A vertical speed indicator;

(b) A free-air temperature indicator;

(c) A heated pitot tube for each airspeed indicator;

(d) A power failure warning device or vacuum indicator to show the power available for gyroscopic instruments from each power source;

(e) An alternate source of static pressure for the altimeter and the airspeed and vertical speed indicators;

(f) For a single-engine aircraft, a generator or generators able to supply all probable combinations of continuous inflight electrical loads for required equipment and for recharging the battery;

(g) For multiengine aircraft, at least two generators each of which is on a separate engine, of which any combination of one-half of the total number are rated sufficiently to supply the electrical loads of all required instruments and equipment necessary for safe emergency operation of the aircraft except that for multiengine helicopters, the two required generators may be mounted on the main rotor drive train; and

(h) Two independent sources of energy (with means of selecting either), of which at least one is an engine-drive pump or generator, each of which is able to drive all gyroscopic instruments and installed so that failure of one instrument or source does not interfere with the energy supply to the remaining instruments or the other energy source, unless, for single-engine aircraft, the rate-of-turn indicator has a source of energy separate from the bank and pitch and direction indicators. For the purpose of this paragraph, for multiengine aircraft, each engine-driven source of energy must be on a different engine.

(i) For the purpose of paragraph (f) of this section, a continuous inflight electrical load includes one that draws current continuously during flight, such as radio equipment, electrically driven instruments, and lights, but does not include occasional intermittent loads.

§ 135.165 Radio and navigational equipment: extended overwater or IFR operations.

(a) No person may operate a turbojet airplane having a passenger seating configuration, excluding any pilot seat, of 10 seats or more, or a multiengine airplane carrying passengers as a "Commuter Air Carrier" as defined in Part 298 of this title, under IFR or in extended overwater operations unless it has at least the following radio communication and navigational equipment appropriate to the facilities to be used which are capable of transmitting to and receiving from, at any place on the route to be flown, at least one ground facility:

(1) Two transmitters, (2) two microphones, (3) two headsets or one headset and one speaker, (4) a marker beacon receiver, (5) two independent receivers for navigation, and (6) two independent receivers for communications.

(b) No person may operate an aircraft other than that specified in paragraph (a) of this section, under IFR or in extended overwater operations unless it has at least the following radio communication and navigational equipment appropriate to the facilities to be used and which are capable of transmitting to, and receiving from, at any place on the route, at least one ground facility:

(1) A transmitter, (2) two microphones, (3) two headsets or one headset and one speaker, (4) a marker beacon receiver, (5) two independent receivers for navigation, (6) two independent receivers for communications, and (7) for extended overwater operations only, an additional transmitter.

(c) For the purpose of paragraphs (a)(5), (a)(6), (b)(5), and (b)(6) of this section, a receiver is independent if the function of any part of it does not depend on the functioning of any part of another receiver. However, a receiver that can receive both communications and navigational signals may be used in place of a separate communications receiver and a separate navigational signal receiver.

§ 135.167 Emergency equipment: extended overwater operations.

(a) No person may operate an aircraft in extended overwater operations unless it carries, installed in conspicuously marked locations easily accessible to the occupants if a ditching occurs, the following equipment:

(1) An approved life preserver equipped with an approved survivor locator light for each occupant of the aircraft. The life preserver must be easily accessible to each seated occupant.

(2) Enough approved life rafts of a rated capacity and buoyancy to accommodate the occupants of the aircraft.

(b) Each life raft required by paragraph (a) of this section must be equipped with or contain at least the following:

(1) One approved survivor locator light.

(2) One approved pyrotechnic signaling device.

(3) Either—

(i) One survival kit, appropriately equipped for the route to be flown; or

(ii) One canopy (for sail, sunshade, or rain catcher);

(iii) One radar reflector;

(iv) One life raft repair kit;

(v) One bailing bucket;

(vi) One signaling mirror;

(vii) One police whistle;

(viii) One raft knife;

(ix) One CO ± bottle for emergency inflation;

(x) One inflation pump;

(xi) Two oars;

(xii) One 75-foot retaining line;

(xiii) One magnetic compass;

(xiv) One dye marker;

(xv) One flashlight having at least two size "D" cells or equivalent;

(xvi) A two-day supply of emergency food rations supplying at least 1,000 calories a day for each person;

(xvii) For each two persons the raft is rated to carry, two pints of water or one sea water desalting kit;

(xviii) One fishing kit; and

(xix) One book on survival appropriate for the area in which the aircraft is operated.

(c) No person may operate an aircraft in extended overwater operations unless there is attached to one of the life rafts required by paragraph (a) of this section, a survival type emergency locator transmitter that meets the applicable requirements of TSO-C91. Batteries used in this transmitter must be replaced (or recharged, if the battery is rechargeable) when the transmitter has been in use for more than 1 cumulative hour, and also when 50 percent of their useful life (or for rechargeable batteries, 50 percent of their useful life of charge), as established by the transmitter manufacturer under TSO-C91, paragraph (g) (2), has expired. The new expiration date for the replacement or recharged battery must be legibly marked on the outside of the transmitter. The battery useful life or useful life of charge requirements of this paragraph do not apply to batteries (such as water-activated batteries) that are essentially unaffected during probable storage intervals.

§ 135.169 Additional airworthiness requirements.

(a) Except for commuter category airplanes, no person may operate a large airplane unless it meets the additional airworthiness requirements of §§ 121.213 through 121.283, 121.307, and 121.312 of this chapter.

(b) No person may operate a reciprocating-engine or turbopropeller-powered small airplane that has a passenger seating configuration, excluding pilot seats, of 10 seats or more unless it is type certificated—

(1) In the transport category;

(2) Before July 1, 1970, in the normal category and meets special conditions issued by the Administrator for airplanes intended for use in operations under this Part;

(3) Before July 19, 1970, in the normal category and meets the additional airworthiness standards in Special Federal Aviation Regulation No 23;

(4) In the normal category and meets the additional airworthiness standards in Appendix A;

(5) In the normal category and complies with section 1.(a) of Special Federal Aviation Regulation No. 41;

(6) In the normal category and complies with section 1.(b) of Special Federal Aviation Regulation No. 41; or

(7) In the commuter category.

(c) No person may operate a small airplane with a passenger seating configuration, excluding any pilot seat, of 10 seats or more, with a seating configuration greater than the maximum seating configuration used in that type airplane in operations under this Part before August 19, 1977. This paragraph does not apply to—

(1) An airplane that is type certificated in the transport category; or

(2) An airplane that complies with—

(i) Appendix A of this Part provided that its passenger seating configuration, excluding pilot seats, does not exceed 19 seats; or

(ii) Special Federal Aviation Regulation No. 41.

[(d) Cargo or baggage compartments:

[(1) After March 20, 1991, each Class C or D compartment, as defined in § 25.857 of Part 25 of this Chapter, greater than 200 cubic feet in volume in a transport category airplane type certificated after January 1, 1958, must have ceiling and sidewall panels which are constructed of:

[(i) Glass fiber reinforced resin;

[(ii) Materials which meet the test requirements of Part 25, Appendix F, Part III of this Chapter; or

[(iii) In the case of liner installations approved prior to March 20, 1989, aluminim.

[(2) For compliance with this paragraph, the term "liner" includes any design feature, such as a joint or fastener, which would affect the capability of the liner to safely contain a fire.]

§ 135.170 Materials for compartment interiors.

No person may operate an airplane that conforms to an amended or supplemental type certificate issued in accordance with SFAR No. 41 for a maximum certificated takeoff weight in excess of 12,500 pounds, unless within one year after issuance of the initial airworthiness certificate under that SFAR, the airplane meets the compartment interior requirements set forth in § 25.853(a), (b), (b-1), (b-2), and (b-3) of this chapter in effect on September 26, 1978.

§ 135.171 Shoulder harness installation at flight crewmember stations.

(a) No person may operate a turbojet aircraft or an aircraft having a passenger seating configuration, excluding any pilot seat, of 10 seats or more unless it is equipped with an approved shoulder harness installed for each flight crewmember station.

(b) Each flight crewmember occupying a station equipped with a shoulder harness must fasten the shoulder harness during takeoff and landing, except that the shoulder harness may be unfastened if the crewmember cannot perform the required duties with the shoulder harness fastened.

§ 135.173 Airborne thunderstorm detection equipment requirements.

(a) No person may operate an aircraft that has a passenger seating configuration, excluding any pilot seat, of 10 seats or more in passenger-carrying operations, except a helicopter operating under day VFR conditions, unless the aircraft is equipped with either approved thunderstorm detection equipment or approved airborne weather radar equipment.

(b) After January 6, 1988, no person may operate a helicopter that has a passenger seating configuration, excluding any pilot seat, of 10 seats or more in passenger-carry operations, under night VFR when current weather reports indicate that thunderstorms or other potentially hazardous weather conditions that can be detected with airborne thunderstorm detection equipment may reasonably be expected along the route to be flown, unless the helicopter is equipped with either approved thunderstorm detection equipment or approved airborne weather radar equipment.

(c) No person may begin a flight under IFR or night VFR conditions when current weather reports indicate that thunderstorms or other potentially hazardous weather conditions that can be detected with airborne thunderstorm detection equipment, required by paragraph (a) or (b) of this section, may reasonably be expected along the route to be flown, unless the airborne thunderstorm detection equipment is in satisfactory operating condition.

(d) If the airborne thunderstorm detection equipment becomes inoperative en route, the aircraft must be operated under the instructions and procedures specified for that event in the manual required by § 135.21.

(e) This section does not apply to aircraft used solely within the State of Hawaii, within the State of Alaska, within that part of Canada west of longitude 130 degrees W, between latitude 70 degrees N, and latitude 53 degrees N, or during any training, test, or ferry flight.

(f) Without regard to any other provision of this part, an alternate electrical power supply is not required for airborne thunderstorm detection equipment.

§ 135.175 Airborne weather radar equipment requirements.

(a) No person may operate a large, transport category aircraft in passenger-carrying operations unless approved airborne weather radar equipment is installed in the aircraft.

(b) No person may begin a flight under IFR or night VFR conditions when current weather reports indicate that thunderstorms, or other potentially hazardous weather conditions that can be detected with airborne weather radar equipment, may reasonably be expected along the route to be flown, unless the airborne weather radar equipment required by paragraph (a) of this section is in satisfactory operating condition.

(c) If the airborne weather radar equipment becomes inoperative en route, the aircraft must be operated under the instructions and procedures specified for that event in the manual required by § 135.21.

(d) This section does not apply to aircraft used solely within State of Hawaii, within the State of Alaska, within that part of Canada west of longitude 130 degrees W, between latitude 70 degrees N, and latitude 53 degrees N, or during any training, test, or ferry flight.

(e) Without regard to any other provision of this part, an alternate electrical power supply is not required for airborne weather radar equipment.

§ 135.177 Emergency equipment requirements for aircraft having a passenger seating configuration of more than 19 passengers.

(a) No person may operate an aircraft having a passenger seating configuration, excluding any pilot seat, of more than 19 seats unless it is equipped with the following emergency equipment:

(1) One approved first aid kit for treatment of injuries likely to occur in flight or in a minor accident, which meets the following specifications and requirements:

(i) Each first aid kit must be dust and moisture proof, and contain only materials that either meet Federal Specifications GGK-319a, as revised, or as approved by the Administrator.

(ii) Required first aid kits must be readily accessible to the cabin flight attendants.

(iii) At time of takeoff, each first aid kit must contain at least the following or other contents approved by the Administrator:

Contents	*Quantity*
Adhesive bandage compressors, 1 in	6
Antiseptic swabs	20
Ammonia inhalents	10
Bandage compressors, 4 in	8
Triangular bandage compressors, 40 in	5
Burn compound, ⅛ oz or an equivalent or other burn remedy	6
Arm splint, noninflatable	1
Leg splint, noninflatable	1
Roller bandage, 4 in	4
Adhesive tape, 1-in standard roll	2
Bandage scissors	1

(2) A crash axe carried so as to be accessible to the crew but inaccessible to passengers during normal operations.

(3) Signs that are visible to all occupants to notify them when smoking is prohibited and when safety belts should be fastened. The signs must be constructed so that they can be turned on and off by a crewmember. Seat belt signs must be turned on for each takeoff and landing, and at other times considered to be necessary by the pilot in command. No smoking signs shall be turned on when required by § 135.127 of this part.

(4) For airplanes, has the additional emergency equipment specified in § 121.310 of this chapter.

(b) Each item of equipment must be inspected regularly under inspection periods established in the operations specifications to ensure its condition for continued serviceability and immediate readiness to perform its intended emergency purposes.

§ 135.179 Inoperable instruments and equipment for multiengine aircraft.

(a) No person may take off a multiengine aircraft unless the following instruments and equipment are in an operable condition:

(1) Instruments and equipment that are either specifically or otherwise required by

the airworthiness requirements under which the aircraft is type certificated and which are essential for safe operations under all operating conditions.

(2) Instruments and equipment required by an airworthiness directive to be in operable condition unless the airworthiness directive provides otherwise.

(b) No person may take off any multiengine aircraft with inoperable instruments or equipment installed, other than those described in paragraph (a) of this section, unless the following conditions are met:

(1) An approved Minimum Equipment List exists for the aircraft type.

(2) The aircraft has within it a letter of authorization, issued by the FAA Flight Standards District Office having certification responsibility for the certificate holder, authorizing operation of the aircraft under the Minimum Equipment List. The letter of authorization may be obtained by written request of the certificate holder. The Minimum Equipment List and the letter of authorization constitute a supplemental type certificate for the aircraft.

(3) The approved Minimum Equipment List must provide for the operation of the aircraft with the instruments and equipment in an inoperable condition.

(4) The aircraft records available to the pilot must include an entry describing the inoperable instruments and equipment.

(5) The aircraft is operated under all applicable conditions and limitations contained in the Minimum Equipment List and the letter authorizing the use of the list.

(c) Without regard to the requirements of paragraph (a)(1) of this section, an aircraft with inoperable instruments or equipment may be operated under a special flight permit under §§ 21.197 and 21.199 of this chapter.

[§ 135.180 Traffic Alert and Collision Avoidance System.

[(a) After February 9, 1995, no person may operate a turbine powered airplane that has a passenger seating configuration, excluding any pilot seat, of 10 to 30 seats unless it is equipped with an approved traffic alert and collision avoidance system.

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[(b) The airplane flight manual required by § 135.21 of this part shall contain the following information on the TCAS I system required by this section:

[(1) Appropriate procedures for—

[(i) The use of the equipment; and

[(ii) Proper flightcrew action with respect to the equipment operation.

[(2) An outline of all input sources that must be operating for the TCAS to function properly.]

§ 135.181 Performance requirements: Aircraft operated over-the-top or in IFR conditions.

(a) Except as provided in paragraphs (b) and (c) of this section, no person may—

(1) Operate a single-engine aircraft carrying passengers over-the-top or in IFR conditions; or

(2) Operate a multiengine aircraft carrying passengers over-the-top or in IFR conditions at a weight that will not allow it to climb, with the critical engine inoperative, at least 50 feet a minute when operating at the MEAs of the route to be flown or 5,000 feet MSL, whichever is higher.

(b) Notwithstanding the restrictions in paragraph (a)(2) of this section, multiengine helicopters carrying passengers offshore may conduct such operations in over-the-top or in IFR conditions at a weight that will allow the helicopter to climb at least 50 feet per minute with the critical engine inoperative when operating at the MEA of the route to be flown or 1,500 feet MSL, whichever is higher.

(c) Without regard to paragraph (a) of this section—

(1) If the latest weather reports or forecasts, or any combination of them, indicate that the weather along the planned route (including takeoff and landing) allows flight under VFR under the ceiling (if a ceiling exists) and that the weather is forecast to remain so until at least 1 hour after the estimated time of arrival at the destination, a person may operate an aircraft over-the-top; or

(2) If the latest weather reports or forecasts, or any combination of them, indicate that the weather along the planned route allows flight under VFR under the ceiling (if a ceiling exists) beginning at a point no more than 15 minutes flying time at normal cruise speed from the departure airport, a person may—

(i) Take off from the departure airport in IFR conditions and fly in IFR conditions to a point no more than 15 minutes flying time at normal cruise speed from that airport;

(ii) Operate an aircraft in IFR conditions if unforecast weather conditions are encountered while en route on a flight planned to be conducted under VFR; and

(iii) Make an IFR approach at the destination airport if unforecast weather conditions are encountered at the airport that do not allow an approach to be completed under VFR.

(d) Without regard to paragraph (a) of this section, a person may operate an aircraft over-the-top under conditions allowing—

(1) For multiengine aircraft, descent or continuance of the flight under VFR if its critical engine fails; or

(2) For single-engine aircraft, descent under VFR if its engine fails.

§ 135.183 Performance requirements: Land aircraft operated over water.

No person may operate a land aircraft carrying passengers over water unless—

(a) It is operated at an altitude that allows it to reach land in the case of engine failure;

(b) It is necessary for takeoff or landing;

(c) It is a multiengine aircraft operated at a weight that will allow it to climb, with the critical engine inoperative, at least 50 feet a minute, at an altitude of 1,000 feet above the surface; or

(d) It is a helicopter equipped with helicopter flotation devices.

§ 135.185 Empty weight and center of gravity: Currency requirement.

(a) No person may operate a multiengine aircraft unless the current empty weight and center of gravity are calculated from values established by actual weighing of the aircraft within the preceding 36 calendar months.

(b) Paragraph (a) of this section does not apply to—

(1) Aircraft issued an original airworthiness certificate within the preceding 36 calendar months; and

(2) Aircraft operated under a weight and balance system approved in the operations specifications of the certificate holder.

Subpart D—VFR/IFR Operating Limitations and Weather Requirements

§ 135.201 Applicability.

This subpart prescribes the operating limitations for VFR/IFR flight operations and associated weather requirements for operations under this part.

§ 135.203 VFR: Minimum altitudes.

Except when necessary for takeoff and landing, no person may operate under VFR—

(a) An airplane—

(1) During the day, below 500 feet above the surface or less than 500 horizontally from any obstacle; or

(2) At night, at an altitude less than 1,000 feet above the highest obstacle within a horizontal distance of 5 miles from the course intended to be flown or, in designated mountainous terrain, less than 2,000 feet above the highest obstacle within a horizontal distance of 5 miles from the course intended to be flown; or

(b) A helicopter over a congested area at an altitude less than 300 feet above the surface.

§ 135.205 VFR: Visibility requirements.

(a) No person may operate an airplane under VFR in uncontrolled airspace when the ceiling is less than 1,000 feet unless flight visibility is at least 2 miles.

(b) No person may operate a helicopter under VFR in uncontrolled airspace at an altitude of 1,200 feet or less above the surface or in control zones unless the visibility is at least—

(1) During the day—½ mile; or

(2) At night—1 mile.

§ 135.207 VFR: Helicopter surface reference requirements.

No person may operate a helicopter under VFR unless that person has visual surface reference or, at night, visual surface light reference, sufficient to safely control the helicopter.

§ 135.209 VFR: Fuel supply.

(a) No person may begin a flight operation in an airplane under VFR unless, considering wind and forecast weather conditions, it has enough fuel to fly to the first point of intended landing and, assuming normal cruising fuel consumption—

(1) During the day, to fly after that for at least 30 minutes; or

(2) At night, to fly after that for at least 45 minutes.

(b) No person may begin a flight operation in a helicopter under VFR unless, considering wind and forecast weather conditions, it has enough fuel to fly to the first point of intended landing and, assuming normal cruising fuel consumption, to fly after that for at least 20 minutes.

§ 135.211 VFR: Over-the-top carrying passengers: Operating limitations.

Subject to any additional limitations in § 135.181, no person may operate an aircraft under VFR over-the-top carrying passengers, unless—

(a) Weather reports or forecasts, or any combination of them, indicate that the weather at the intended point of termination of over-the-top flight—

(1) Allows descent to beneath the ceiling under VFR and is forecast to remain so until at least 1 hour after the estimated time of arrival at that point; or

(2)) Allows an IFR approach and landing with flight clear of the clouds until reaching the prescribed initial approach altitude over the final approach facility, unless the approach is made with the use of radar under § 91.116(f) of this chapter; or

(b) It is operated under conditions allowing—

(1) For multiengine aircraft, descent or continuation of the flight under VFR if its critical engine fails; or

(2) For single-engine aircraft, descent under VFR if its engine fails.

§ 135.213 Weather reports and forecasts.

(a) Whenever a person operating an aircraft under this Part is required to use a weather report or forecast, that person shall use that of the U.S. National Weather Service, a source approved by the U.S. National Weather Service, or a source approved by the Administrator. However, for operations under VFR, the pilot in command may, if such a report is not available, use weather information based on that pilot's own observations or on those of other persons competent to supply appropriate observations.

(b) For the purposes of paragraph (a) ot this section, weather observations made and furnished to pilots to conduct IFR operations at an airport must be taken at the airport where those IFR operations are conducted, unless the Administrator issues operations specifications allowing the use of weather observations taken at a location not at the airport where the IFR operations are conducted. The Administrator issues such operations specifications when, after investigation by the U.S. National Weather Service and the FAA Flight Standards District Office charged with the overall inspection of the certificate holder, it is found that the standards of safety for that operation would allow the deviation from this paragraph for a particular operation for which an ATCO operating certificate has been issued.

§ 135.215 IFR: operating limitations.

(a) Except as provided in paragraphs (b), (c) and (d) of this section, no person may operate an aircraft under IFR outside of controlled airspace or at any airport that does not have an approved standard instrument approach procedure.

(b) The Administrator may issue operations specifications to the certificate holder to allow it to operate under IFR over routes outside controlled airspace if—

(1) The certificate holder shows the Administrator that the flight crew is able to navigate, without visual reference to the ground, over an intended track without deviating more than 5 degrees or 5 miles, whichever is less, from that track; and

(2) The Administrator determines that the proposed operations can be conducted safely.

(c) A person may operate an aircraft under IFR outside of controlled airspace if the certificate holder has been approved for the operations and that operation is necessary to—

(1) Conduct an instrument approach to an airport for which there is in use a current approved standard or special instrument approach procedure; or

(2) Climb into controlled airspace during an approved missed approach procedure; or

(3) Make an IFR departure from an airport having an approved instrument approach procedure.

(d) The Administrator may issue operations specifications to the certificate holder to allow it to depart at an airport that does not have an approved standard instrument approach procedure when the Administrator determines that it is necessary to make an IFR departure from that airport and that the proposed operations can be conducted safely. The approval to operate at that airport does not include an approval to make an IFR approach to that airport.

§ 135.217 IFR: takeoff limitations.

No person may takeoff an aircraft under IFR from an airport where weather conditions are at or above take off minimums but are below authorized IFR landing minimums unless there is an alternate airport within 1 hour's flying time (at normal cruising speed, in still air) of the airport of departure.

§ 135.219 IFR: destination airport weather minimums.

No person may take off an aircraft under IFR or being an IFR or over-the-top operation unless the latest weather reports or forecasts, or any combination of them, indicate that weather conditions at the estimated time of arrival at the next airport of intended landing will be at or above authorized IFR landing minimums.

§ 135.221 IFR: alternate airport weather minimums.

No person may designate an alternate airport unless the weather reports or forecasts, or any combination of them, indicate that the weather conditions will be at or above authorized alternate airport landing minimums for that airport at the estimated time of arrival.

§ 135.223 IFR: alternate airport requirements.

(a) Except as provided in paragraph (b) of this section, no person may operate an aircraft in IFR conditions unless it carries enough fuel (considering weather reports or forecasts or any combination of them) to—

(1) Complete the flight to the first airport of intended landing;

(2) Fly from that airport to the alternate airport; and

[(3) Fly after that for 45 minutes at normal cruising speed, or helicopters, fly after that for 30 minutes at normal cruising speed.]

(b) Paragraph (a)(2) of this section does not apply if Part 97 of this chapter prescribes a standard instrument approach procedure for the first airport of intended landing and, for at least one hour before and after the estimated time of arrival, the appropriate weather reports or forecasts, or any combination of them, indicate that—

(1) The ceiling will be at least 1,500 feet above the lowest circling approach MDA; or

(2) If a circling instrument approach is not authorized for the airport, the ceiling will be at least 1,500 feet above the lowest published minimum or 2,000 feet above the airport elevation, whichever is higher; and

(3) Visibility for that airport is forecast to be at least three miles, or two miles more than the lowest applicable visibility minimums, whichever is the greater, for the instrument approach procedure to be used at the destination airport.

§ 135.225 IFR: takeoff, approach and landing minimums.

(a) No pilot may begin instrument approach procedure to an airport unless—

(1) That airport has a weather reporting facility operated by the U.S. National Weather Service, a source approved by U.S. National Weather Service, or a source approved by the Administrator; and

(2) The latest weather report issued by that weather reporting facility indicates that weather conditions are at or above the authorized IFR landing minimums for that airport.

(b) No pilot may begin the final approach segment of an instrument approach procedure to an airport unless the latest weather reported by the facility described in paragraph (a)(1) of this section indicates that weather conditions are at or above the authorized IFR landing minimums for that procedure.

(c) If a pilot has begun the final approach segment of an instrument approach to an airport under paragraph (b) of this section and a later weather report indicating below minimum conditions is received after the aircraft is—

(1) On an ILS final approach and has passed the final approach fix; or

(2) On an ASR or PAR final approach and has been turned over to the final approach controller; or

(3) On a final approach using a VOR, NDB, or comparable approach procedure; and the aircraft—

(i) Has passed the appropriate facility or final approach fix; or

(ii) Where a final approach fix is not specified, has completed the procedure turn and is established inbound toward the airport on the final approach course within the distance prescribed in the procedure; the approach may be continued and a landing made if the pilot finds, upon reaching the authorized MDA or DH, that actual weather conditions are at least equal to the minimums prescribed for the procedure.

(d) The MDA or DH and visibility landing minimums prescribed in Part 97 of this chapter or in the operator's operations specifications are increased by 100 feet and ½ mile respectively, but not to exceed the ceiling and visibility minimums for that airport when used as an alternate airport, for each pilot in command of a turbine-powered airplane who has not served at least 100 hours as pilot in command in that type of airplane.

(e) Each pilot making an IFR takeoff or approach and landing at a military or foreign airport shall comply with applicable instrument approach procedures and weather minimums prescribed by the authority having jurisdiction over the airport. In addition, no pilot may, at that airport—

(1) Take off under IFR when the visibility is less than 1 mile; or

(2) Make an instrument approach when the visibility is less than ½ mile.

(f) If takeoff minimums are specified in Part 97 of this chapter for the takeoff airport, no pilot may take off an aircraft under IFR when the weather conditions reported by the facility described in paragraph (a)(1) of this section are less than the takeoff minimums specified for the takeoff airport in Part 97 or in the certificate holder's operations specifications.

(g) Except as provided in paragraph (h) of this section, if takeoff minimums are not prescribed in Part 97 of this chapter for the takeoff airport, no pilot may take off an aircraft under IFR when the weather conditions reported by the facility described in paragraph (a)(1) of this section are less than that prescribed in Part 91 of this chapter or in the certificate holder's operations specifications.

(h) At airports where straight-in instrument approach procedures are authorized, a pilot may take off an aircraft under IFR when the weather conditions reported by the facility described in paragraph (a)(1) of this section are equal to or better than the lowest straight-in landing minimums, unless otherwise restricted, if—

(1) The wind direction and velocity at the time of takeoff are such that a straight-in instrument approach can be made to the runway served by the instrument approach;

(2) The associated ground facilities upon which the landing minimums are predicated and the related airborne equipment are in the normal operation; and

(3) The certificate holder has been approved for such operations.

§ 135.227 Icing conditions: operating limitations.

(a) No pilot may take off an aircraft that has—

(1) Frost, snow, or ice adhering to any rotor blade, propeller, windshield, or powerplant installation, or to an airspeed, altimeter, rate of climb, or flight attitude instrument system;

(2) Snow or ice adhering to the wings or stabilizing or control surfaces; or

(3) Any frost adhering to the wings, or stabilizing or control surfaces, unless that frost has been polished to make it smooth.

(b) Except for an airplane that has ice protection provisions that meet § 34 of Appendix A, or those for transport category airplane type certificate, no pilot may fly—

(1) Under IFR into known or forecast light or moderate icing conditions; or

(2) Under VFR into known light or moderate icing conditions; unless the aircraft has functioning deicing or anti-icing equipment protecting each rotor blade, propeller, windshield, wing, stabilizing or control surface, and each airspeed, altimeter, rate of climb, or flight attitude instrument system.:

[(c) No pilot may fly a helicopter under IFR into known or forecast icing conditions or under VFR into known icing conditions unless it has been type certificated and appropriately equipped for operations in icing conditions.]

[(d)] Except for an airplane that has ice protection provisions that meet § 34 of Appendix A, or those for transport category airplane type certification, no pilot may fly an aircraft into known or forecast severe icing conditions.

[(e)] If current weather reports and briefing information relied upon by the pilot in command indicate that the forecast icing condition that would otherwise prohibit the flight will not be encountered during the flight because of changed weather conditions since the forecast, [the restrictions in paragraphs (b), (c), and (d)] of this section based on forecast conditions do not apply.

§ 135.229 Airport requirements.

(a) No certificate holder may use any airport unless it is adequate for the proposed operation, considering such items as size, surface, obstructions, and lighting.

(b) No pilot of an aircraft carrying passengers at night may take off from, or land on, an airport unless—

(1) That pilot has determined the wind direction from an illuminated wind direction indicator or local ground communications or, in the case of takeoff, that pilot's personal observations; and

(2) The limits of the area to be used for landing or takeoff are clearly shown—

(i) For airplanes, by boundary or runway marker lights;

(ii) For helicopters, by boundary or runway marker lights or reflective material.

(c) For the purpose of paragraph (b) of this section, if the area to be used for takeoff or landing is marked by flare pots or lanterns, their use must be approved by the Administrator.

Subpart E—Flight Crewmember Requirements

§ 135.241 Applicability.

This subpart prescribes the flight crewmember requirements for operations under this Part.

§ 135.243 Pilot in command qualifications.

(a) No certificate holder may use a person, nor may any person serve, as pilot in command in passenger-carrying operations of a turbojet airplane, of an airplane having a passenger seating configuration, excluding any pilot seat, of 10 seats or more, or a multiengine airplane being operated by the "Commuter Air Carrier" (as defined in Part 298 of this Title), unless that person holds an airline transport pilot certificate with appropriate category and class ratings and, if required, an appropriate type rating for that airplane.

(b) Except as provided in paragraph (a) of this section, no certificate holder may use a person, nor may any person serve, as pilot in command of an aircraft under VFR unless that person—

(1) Holds at least a commercial pilot certificate with appropriate category and class ratings and, if required, an appropriate type rating for that aircraft; and

(2) Has had at least 500 hours of flight time as a pilot, including at least 100 hours of cross-country flight time, at least 25 hours of which were at night; and

(3) For an airplane, holds an instrument rating or an airline transport pilot certificate with an airplane category rating; or

(4) For helicopter operations conducted VFR over-the-top, holds a helicopter instrument rating, or an airline transport pilot certificate with a category and class rating for that aircraft, not limited to VFR.

(c) Except as provided in paragraph (a) of this section, no certificate holder may use a person, nor may any person serve, as pilot in command of an aircraft under IFR unless that person—

(1) Holds at least a commercial pilot certificate with appropriate category and class ratings and, if required, an appropriate type rating for that aircraft; and

(2) Has had at least 1,200 hours of flight time as a pilot, including 500 hours of cross-country flight time, 100 hours of night flight time, and 75 hours of actual or simulated instrument time at least 50 hours of which were in actual flight; and

(3) For an airplane, holds an instrument rating or an airline transport pilot certificate with an airplane category rating; or

(4) For a helicopter, holds a helicopter instrument rating, or an airline transport pilot certificate with a category and class rating for the aircraft, not limited to VFR.

[(d) Paragraph (b)(3) of this section does not apply when—

[(1) The aircraft used is a single reciprocating-engine-powered airplane;

[(2) The certificate holder does not conduct any operation pursuant to a published flight schedule which specifies five or more round trips a week between two or more points and places between which the round trips are performed, and does not transport mail by air under a contract or contracts with the United States Postal Service having total amount estimated at the beginning of any semiannual reporting period (January 1-June 30; July 1-December 31) to be in excess of $20,000 over the 12 months commencing with the beginning of the reporting period;

[(3) The area, as specified in the certificate holder's operations specifications, is an isolated area, as determined by the Flight Standards district office, if it is shown that—

[(i) The primary means of navigation in the area is by pilotage, since radio navigational aids are largely ineffective; and

[(ii) The primary means of transportation in the area is by air;

[(4) Each flight is conducted under day VFR with a ceiling of not less than 1,000 feet and visibility not less than 3 statute miles;

[(5) Weather reports or forecasts, or any combination of them, indicate that for the period commencing with the planned departure and ending 30 minutes after the planned arrival at the destination the flight may be conducted under VFR with a ceiling of not less than 1,000 feet and visibility of not less than 3 statute miles, except that if weather reports and forecasts are not available, the pilot in command may use that pilot's observations or those of other persons competent to supply weather observations if those observations indicate the flight may be conducted under VFR with the ceiling and visibility required in this paragraph;

[(6) The distance of each flight from the certificate holder's base of operation to destination does not exceed 250 nautical miles for a pilot who holds a commercial pilot certificate with an airplane rating without an instrument rating, provided the pilot's certificate does not contain any limitation to the contrary; and

[(7) The areas to be flown are approved by the certificate-holding FAA Flight Standards district office and are listed in the certificate holder's operations specifications.]

§ 135.244 Operating experience.

(a) No certificate holder may use any person, nor may any person serve, as a pilot in command of an aircraft operated by a Commuter Air Carrier (as defined in § 298.2 of this title) in passenger-carrying operations, unless that person has completed, prior to designation as pilot in command, on that make and basic model aircraft and in that crewmember position, the following operating experience in each make and basic model of aircraft to be flown:

(1) Aircraft, single engine—10 hours.

(2) Aircraft multiengine, reciprocating engine-powered—15 hours.

(3) Aircraft multiengine, turbine engine-powered—20 hours.

(4) Airplane, turbojet-powered—25 hours.

(b) In acquiring the operating experience, each person must comply with the following:

(1) The operating experience must be acquired after saftisfactory completion of the appropriate ground and flight training for the aircraft and crewmember position. Approved provisions for the operating experience must be included in the certificate holder's training program.

(2) The experience must be acquired in flight during commuter passenger-carrying operations under this part. However, in the case of an aircraft not previously used by the certificate holder in operations under this part, operating experience acquired in the aircraft during proving flights or ferry flights may be used to meet this requirement.

(3) Each person must acquire the operating experience while performing the duties of a pilot in command under the supervision of a qualified check pilot.

(4) The hours of operating experience may be reduced to not less than 50 percent of the hours required by this section by the substitution of one additional takeoff and landing for each hour of flight.

§ 135.245 Second in command qualifications.

(a) Except as provided in paragraph (b), no certificate holder may use any person, nor may any person serve, as second in command of an aircraft unless that person holds at least a commercial pilot certificate with appropriate category and class ratings and an instrument rating. For flight under IFR, that person must meet the recent instrument experience requirements of Part 61 of this chapter.

(b) A second in command of a helicopter operated under VFR, other than over-the-top, must have at least a commercial pilot certificate with an appropriate aircraft category and class rating.

§ 135.247 Pilot qualifications: recent experience.

(a) No certificate holder may use any person, nor may any person serve, as pilot in command of an aircraft carrying passengers unless, within the preceding 90 days, that person has—

(1) Made three takeoffs and three landings as the sole manipulator of the flight controls in an aircraft of the same category and class and, if a type rating is required, of the same type in which that person is to serve; or

(2) For operation during the period beginning 1 hour after sunset and ending 1 hour before sunrise (as published in the Air Almanac), made three takeoffs and three landings during that period as the sole manipulator of the flight controls in an aircraft of the same category and class and, if a type rating is required, of the same type in which that person is to serve.

A person who complies with paragraph (a)(2) of this section need not comply with paragraph (a)(1) of this section.

(b) For the purpose of paragraph (a) of this section, if the aircraft is a tailwheel airplane, each takeoff must be made in a tailwheel airplane and each landing must be made to a full stop in a tailwheel airplane.

[§ 135.249 Use of prohibited drugs.]

[(a) This section applies to persons who perform a function listed in Appendix I to Part 121 of this chapter for a certificate holder or an operator. For the purpose of this section, a person who performs such a function pursuant to a contract with the certificate holder or the operator is considered to be performing that function for the certificate holder or the operator.

[(b) No certificate holder or operator may knowingly use any person to perform, nor may any person perform for a certificate holder or an operator, either directly or by contract, any function listed in Appendix I to Part 121 of this chapter while that person has a prohibited drug, as defined in that appendix, in his or her system.

[(c) Except as provided in paragraph (d) of this section, no certificate holder or operator may knowingly use any person to perform, nor may any person perform for a certificate holder or an operator, either directly or by contract, any function listed in Appendix I to Part 121 of this chapter if that person has failed a test or refused to submit to a test required by that appendix given by any certificate holder or any operator.

[(d) Paragraph (c) of this section does not apply to the person who has received a recommendation to be hired or to return to duty from a medical review officer in accordance with Appendix I to Part 121 of this chapter or who has received a special issuance medical certificate after evaluation by the Federal Air Surgeon for drug dependency in accordance with Part 67 of this chapter.]

[§ 135.251 Testing for prohibited drugs.]

[(a) Each certificate holder or operator shall test each of its employees who performs a function listed in Appendix I to Part 121 of this chapter in accordance with that appendix.

[(b) No certificate holder or operator may use any contractor to perform a function listed in Appendix I to Part 121 of this chapter unless that contractor tests each employee performing such a function for the certificate holder or operator in accordance with that appendix.]

Subpart F—Flight Crewmember Flight Time Limitations and Rest Requirements

§ 135.261 Applicability.

Sections 135.263 through 135.271 prescribe flight time limitations and rest requirements for operations conducted under this part as follows:

(a) Section 135.263 applies to all operations under this subpart.

(b) Section 135.265 applies to:

(1) Scheduled passenger-carrying operations except those conducted solely within the state of Alaska. "Scheduled passenger-carrying operations" means passenger-carrying operations that are conducted in accordance with a published schedule which covers at least five round trips per week on at least one route between two or more points, includes dates or times (or both), and is openly advertised or otherwise made readily available to the general public, and

(2) Any other operation under this part, if the operator elects to comply with § 135.265 and obtains an appropriate operations specification amendment.

(c) Sections 135.267 and 135.269 apply to any operation that is not a scheduled passenger-carrying operation and to any operation conducted solely within the State of Alaska, unless the operator elects to comply with § 135.265 as authorized under paragraph (b)(2) of this section.

(d) Section 135.271 contains special daily flight time limits for operations conducted under the helicopter emergency medial evacuation service (HEMES).

§ 135.263 Flight time limitations and rest requirements: all certificate holders.

(a) A certificate holder may assign a flight crewmember and a flight crewmember may accept an assignment for flight time only when the applicable requirements of §§ 135.263 through 135.271 are met.

(b) No certificate holder may assign any flight crewmember to any duty with the certificate holder during any required rest period.

(c) Time spent in transportation, not local in character, that a certificate holder requires of a flight crewmember and provides to transport the crewmember to an airport at which he is to serve on a flight as a crewmember, or from an airport at which he was relieved from duty to return to his home station, is not considered part of a rest period.

(d) A flight crewmember is not considered to be assigned flight time in excess of flight time limitations if the flights to which he is assigned normally terminate within the limitations, but due to circumstances beyond the control of the certificate holder or flight crewmember (such as adverse weather conditions), are not at the time of departure expected to reach their destination within the planned flight time.

§ 135.265 Flight time limitations and rest requirments: Scheduled operations.

(a) No certificate holder may schedule any flight crewmember, and no flight crewmember may accept an assignment, for flight time in scheduled operations or in other commercial flying if that crewmember's total flight time in all commercial flying will exceed—

(1) 1,200 hours in any calendar year.

(2) 120 hours in any calendar month.

(3) 34 hours in any 7 consecutive days.

(4) 8 hours during any 24 consecutive hours for a flight crew consisting of one pilot.

(5) 8 hours between required rest periods for a flight crew consisting of two pilots qualified under this part for the operation being conducted.

(b) Except as provided in paragraph (c) of this section, no certificate holder may schedule a flight crewmember, and no flight crewmember may accept an assignment, for flight time during the 24 consecutive hours preceding the scheduled completion of any flight segment without a scheduled rest period during that 24 hours of at least the following:

(1) 9 consecutive hours of rest for less than 8 hours of scheduled flight time.

(2) 10 consecutive hours of rest for 8 or more but less than 9 hours of scheduled flight time.

(3) 11 consecutive hours of rest for 9 or more hours of scheduled flight time.

(c) A certificate holder may schedule a flight crewmember for less than the rest required in paragraph (b) of this section or may reduce a scheduled rest under the following conditions:

(1) A rest required under paragraph (b)(1) of this section may be scheduled for or reduced to a minimum of 8 hours if the flight crewmember is given a rest period of at least 10 hours that must begin no later than 24 hours after the commencement of the reduced rest period.

(2) A rest required under paragraph (b)(2) of this section may be scheduled for or reduced to a minimum of 8 hours if the flight crewmember is given a rest period of at least 11 hours that must begin no later than 24 hours after the commencement of the reduced rest period.

(3) A rest required under paragraph (b)(3) of this section may be scheduled for or reduced to a minimum of 9 hours if the flight crewmember is given a rest period of at least 12 hours that must begin no later than 24 hours after the commencement of the reduced rest period.

(d) Each certificate holder shall relieve each flight crewmember engaged in scheduled air transportation from all further duty for at least 24 consecutive hours during any 7 consecutive days.

§ 135.267 Flight time limitations and rest requirments: unscheduled one- and two-pilot crews.

(a) No certificate holder may assign any flight crewmember, and no flight crewmember may accept an assignment, for flight time as a member of a one- or two-pilot crew if that crewmember's total flight time in all commercial flying will exceed—

(1) 500 hours in any calendar quarter.

(2) 800 hours in any two consecutive calendar quarters.

(3) 1,400 hours in any calendar year.

(b) Except as provided in paragraph (c) of this section, during any 24 consecutive hours the total flight time of the assigned flight when added to any other commercial flying by that flight crewmember may not exceed—

(1) 8 hours for a flight crew consisting of one pilot; or

(2) 10 hours for a flight crew consisting of two pilots qualified under this part for the operation being conducted.

(c) A flight crewmember's flight time may exceed the flight time limits of paragraph (b) of this section if the assigned flight time occurs during a regularly assigned duty period of no more than 14 hours and—

(1) If this duty period is immediately preceded by and followed by a required rest period of at least 10 consecutive hours of rest;

(2) If flight time is assigned during this period, that total flight time when added to any other commercial flying by the flight crewmember may not exceed—

(i) 8 hours for a flight crew consisting of one pilot; or

(ii) 10 hours for a flight crew consisting of two pilots; and

(3) If the combined duty and rest periods equal 24 hours.

(d) Each assignment under paragraph (b) of this section must provide for at least 10 consecutive hours of rest during the 24-hour period that precedes the planned completion time of the assignment.

(e) When a flight crewmember has exceeded the daily flight time limitations in this section, because of circumstances beyond the control of the certificate holder or flight crewmember (such as adverse weather conditions), that flight crewmember must have a rest period before being assigned or accepting an assignment for flight time of at least—

(1) 11 consecutive hours of rest if the flight time limitation is exceeded by not more than 30 minutes;

(2) 12 consecutive hours of rest if the flight time limitation is exceeded by more than 30 minutes, but not more than 60 minutes; and

(3) 16 consecutive hours of rest if the flight time limitation is exceeded by more than 60 minutes.

(f) The certificate holder must provide each flight crewmember at least 13 rest periods of at least 24 consecutive hours each in each calendar quarter.

(g) The Director of Flight Operations may issue operations specifications authorizing a deviation from any specific requirement of this section if he finds that the deviation is justified to allow a certificate holder additional time, but in no case beyond October 1, 1987, to bring its operations into full compliance with the requirements of this section. Each application for a deviation must be submitted to the Director of Flight Operations before October 1, 1986. Each applicant for a deviation may continue to operate under the requirements of Subpart F of this part as in effect on September 30, 1985, until the Director of Flight Operations has responded to the deviation request.

§ 135.269 Flight time limitations and rest requirements: unscheduled three- and four-pilot crews.

(a) No certificate holder may assign any flight crewmember, and no flight crewmember may accept an assignment, for flight time as a member of a three- or four-pilot crew if that crewmember's total flight time in all commercial flying will exceed—

(1) 500 hours in any calendar quarter.

(2) 800 hours in any two consecutive calendar quarters.

(3) 1,400 hours in any calendar year.

(b) No certificate holder may assign any pilot to a crew of three or four pilots, unless that assignment provides—

(1) At least 10 consecutive hours of rest immediately preceding the assignment;

(2) No more than 8 hours of flight deck duty in any 24 consecutive hours;

(3) No more than 18 duty hours for a three-pilot crew or 20 duty hours for a four-pilot crew in any 24 consecutive hours;

(4) No more than 12 hours aloft for a three-pilot crew or 16 hours aloft for a four-pilot crew during the maximum duty hours specified in paragraph (b)(3) of this section;

(5) Adequate sleeping facilities on the aircraft for the relief pilot;

(6) Upon completion of the assignment, a rest period of at least 12 hours;

(7) For a three-pilot crew, a crew which consists of at least the following:

(i) A pilot in command (PIC) who meets the applicable flight crewmember requirements of Subpart E of Part 135;

(ii) A PIC who meets the applicable flight crewmember requirements of Subpart E of Part 135, except those prescribed in §§ 135.244 and 135.247; and

(iii) A second in command (SIC) who meets the SIC qualifications of § 135.245.

(8) For a four-pilot crew, at least three pilots who meet the conditions of paragraph (b)(7) of this section, plus a fourth pilot who meets the SIC qualifications of § 135.245.

(c) When a flight crewmember has exceeded the daily flight deck duty limitation in this section by more than 60 minutes, because of circumstances beyond the control of the certificate holder or flight crewmember, that flight crewmember must have a rest period before the next duty period of at least 16 consecutive hours.

(d) A certificate holder must provide each flight crewmember at least 13 rest periods of at least 24 consecutive hours each in each calendar quarter.

§ 135.271 Helicopter hospital emergency medical evacuation service (HEMES).

(a) No certificate holder may assign any flight crewmember, and no flight crewmember may accept an assignment for flight time if that crewmember's total flight time in all commercial flying will exceed—

(1) 500 hours in any calendar quarter.

(2) 800 hours in any two consecutive calendar quarters.

(3) 1,400 hours in any calendar year.

(b) No certificate holder may assign a helicopter flight crewmember, and no flight crewmember may accept an assignment, for hospital emergency medical evacuation service helicopter operations unless that assignment provides for at least 10 consecutive hours of rest immediately preceding reporting to the hospital for availability for flight time.

(c) No flight crewmember may accrue more than 8 hours of flight time during any 24-consecutive hour period of a HEMES assignment, unless an emergency medical evacuation operation is prolonged. Each flight crewmember who exceeds the daily 8 hour flight time limitation in this paragraph must be relieved of the HEMES assignment immediately upon the completion of that emergency medical operation and must be given a rest period in compliance with paragraph (h) of this section.

(d) Each flight crewmember must receive at least 8 consecutive hours of rest during any 24 consecutive hour period of a HEMES assignment. A flight crewmember must be relieved of the HEMES assignment if he or she has not or cannot receive at least 8 consecutive hours of rest during any 24 consecutive hour period of a HEMES assignment.

(e) A HEMES assignment may not exceed 72 consecutive hours at the hospital.

(f) An adequate place of rest must be provided at, or in close proximity to, the hospital at which the HEMES assignment is being performed.

(g) No certificate holder may assign any other duties to a flight crewmember during a HEMES assignment.

(h) Each pilot must be given a rest period upon completion of the HEMES assignment and prior to being assigned any further duty with the certificate holder of—

(1) At least 12 consecutive hours for an assignment of less than 48 hours.

(2) At least 16 consecutive hours for an assignment of more than 48 hours.

(i) The certificate holder must provide each flight crewmember at least 13 rest periods of at least 24 consecutive hours each in each calendar quarter.

Subpart G—Crewmember Testing Requirements

§ 135.291 Applicability.

This subpart prescribes the tests and checks required for pilot and flight attendant crewmembers and for the approval of check pilots in operations under this part.

§ 135.293 Initial and recurrent pilot testing requirements.

(a) No certificate holder may use a pilot, nor may any person serve as a pilot, unless, since the beginning of the 12th calendar month before that service, that pilot has passed a written or oral test, given by the Administrator or an authorized check pilot, on that pilot's knowledge in the following areas—

(1) The appropriate provisions of Parts 61, 91, and 135 of this chapter and the operations specifications and the manual of the certificate holder;

(2) For each type of aircraft to be flown by the pilot, the aircraft powerplant, major components and systems, major appliances, performance and operating limitations, standard and emergency operating procedures, and the contents of the approved Aircraft Flight Manual or equivalent, as applicable;

(3) For each type of aircraft to be flown by the pilot, the method of determining compliance with weight and balance limitations for takeoff, landing and en route operations;

(4) Navigation and use of air navigation aids appropriate to the operation or pilot authorization, including, when applicable, instrument approach facilities and procedures;

(5) Air traffic control procedures, including IFR procedures when applicable;

(6) Meteorology in general, including the principles of frontal systems, icing, fog, thunderstorms, and windshear, and, if appropriate for the operation of the certificate holder, high altitude weather;

(7) Procedures for—

(i) Recognizing and avoiding severe weather situations;

(ii) Escaping from severe weather situations, in case of inadvertent encounters, including low-altitude windshear (except that rotorcraft pilots are not required to be tested on escaping from low-altitude windshear); and

(iii) Operating in or near thunderstorms (including best penetrating altitudes), turbulent air (including clear air turbulence), icing, hail, and other potentially hazardous meteorological conditions; and

(8) New equipment, procedures, or techniques, as appropriate.

(b) No certificate holder may use a pilot, nor may any person serve as a pilot, in any aircraft unless, since the beginning of the 12th calendar month before that service, that pilot has passed a competency check given by the Administrator or an authorized check pilot in that class of aircraft, if single-engine airplane other than turbojet, or that type of aircraft, if helicopter, multiengine airplane, or turbojet airplane, to determine the pilot's competence in practical skills and techniques in that aircraft or class of aircraft. The extent of the competency check shall be determined by the Administrator or authorized check point conducting the com-

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petency check. The competency check may include any of the maneuvers and procedures currently required for the original issuance of the particular pilot certificate required for the operations authorized and appropriate to the category, class and type of aircraft involved. For the purposes of this paragraph, type, as to an airplane, means any one of a group of airplanes determined by the Administrator to have a similar means of propulsion, the same manufacturer, and no significantly different handling or flight characteristics. For the purposes of this paragraph, type, as to a helicopter, means a basic make and model.

(c) The instrument proficiency check required by § 135.297 may be substituted for the competency check required by this section for the type of aircraft used in the check.

(d) For the purpose of this part, competent performance of a procedure or maneuver by a person to be used as a pilot requires that the pilot be the obvious master of the aircraft, with the successful outcome of the maneuver never in doubt.

(e) The Administrator or authorized check pilot certifies the competency of each pilot who passes the knowledge or flight check in the certificate holder's pilot records.

(f) Portions of a required competency check may be given in an aircraft simulator for other appropriate training device, if approved by the Administrator.

§ 135.295 Initial and recurrent flight attendant crewmember testing requirements.

No certificate holder may use a flight attendant crewmember, nor may any person serve as a flight attendant crewmember unless, since the beginning of the 12th calendar month before that service, the certificate holder has determined by appropriate initial and recurrent testing that the person is knowledgeable and competent in the following areas as appropriate to assigned duties and responsibilities—

(a) Authority of the pilot in command;

(b) Passenger handling, including procedures to be followed in handling deranged persons or other persons whose conduct might jeopardize safety;

(c) Crewmember assignments, functions, and responsibilities during ditching and evacuation of persons who may need the assistance of another person to move expeditiously to an exit in an emergency;

(d) Briefing of passengers;

(e) Location and operation of portable fire extinguishers and other items of emergency equipment;

(f) Proper use of cabin equipment and controls;

(g) Location and operation of passenger oxygen equipment;

(h) Location and operation of all normal and emergency exits, including evacuation chutes and escape ropes; and

(i) Seating of persons who may need assistance of another person to move rapidly to an exit in an emergency as prescribed by the certificate holder's operations manual.

§ 135.297 Pilot in command: instrument proficiency check requirements.

(a) No certificate holder may use a pilot, nor may any person serve, as a pilot in command of an aircraft under IFR unless, since the beginning of the 6th calendar month before that service, that pilot has passed an instrument proficiency check under this section administered by the Administrator or an authorized check pilot

(b) No pilot may use any type of precision instrument approach procedure under IFR unless, since the beginning of the 6th calendar month before that use, the pilot satisfactorily demonstrated that type of approach procedure. No pilot may use any type of nonprecision approach procedure under IFR unless, since the beginning of the 6th calendar month before that use, the pilot has satisfactorily demonstrated either that type of approach procedure or any other two different types of nonprecision approach procedures. The instrument approach procedure or procedures must include at least one straight-in approach, one circling approach, and one missed approach. Each type of approach procedure demonstrated must be conducted to published minimums for that procedure.]

(c) The instrument proficiency check required by paragraph (a) of this section consists of an oral or written equipment test and a flight check under simulated or actual IFR conditions. The equipment test includes questions on emergency procedures, engine operation, fuel and lubrication systems, power settings, stall speeds, best engine-out speed, propeller and supercharger operations, and hydraulic, mechanical, and electrical systems, as appropriate. The flight check includes navigation by instruments, recovery from simulated emergencies, and standard instrument approaches involving navigational facilities which that pilot is to be authorized to use. Each pilot taking the instrument proficiency check must show that standard of competence required by § 135.293(d).

(1) The instrument proficiency check must—

(i) For a pilot in command of an airplane under § 135.243(a), include the procedures and maneuvers for an airline transport pilot certificate in the particular type of airplane, if appropriate; and

(ii) For a pilot in command of an airplane or helicopter under § 135.243(c), include the procedures and maneuvers for a commercial pilot certificate with an instrument rating and, if required, for the appropriate type rating.

(2) The instrument proficiency check must be given by an authorized check airman or by the Administrator.

(d) If the pilot in command is assigned to pilot only one type of aircraft, that pilot must take the instrument proficiency check required by paragraph (a) of this section in that type of aircraft.

(e) If the pilot in command is assigned to pilot more than one type of aircraft, that pilot must take the instrument proficiency check required by paragraph (a) of this section in each type of aircraft to which that pilot is assigned, in rotation, but not more than one flight check during each period described in paragraph (a) of this section.

(f) If the pilot in command is assigned to pilot both single-engine and multiengine aircraft, that pilot must initially take the instrument proficiency check required by paragraph (a) of this section in a multiengine aircraft, and each succeeding check alternately in single-engine and multiengine aircraft, but not more than one flight check during each period described in paragraph (a) of this section. Portions of a required flight check may be given in an aircraft simulator or other appropriate training device, if approved by the Administrator.

(g) If the pilot in command is authorized to use an autopilot system in place of a second in command, that pilot must show, during the required instrument proficiency check, that the pilot is able (without a second in command) both with and without using the autopilot to—

(1) Conduct instrument operations competently; and

(2) Properly conduct air-ground communications and comply with complex air traffic control instructions.

(3) Each pilot taking the autopilot check must show that, while using the autopilot, the airplane can be operated as proficiently as it would be if a second in command were present to handle air-ground communications and air traffic control instructions. The autopilot check need only be demonstrated once every 12 calendar months during the instrument proficiency check required under paragraph (a) of this section.

[(h) [Deleted.]]

§ 135.299 Pilot in command: line checks: routes and airports.

(a) No certificate holder may use a pilot, nor may any person serve as a pilot in command of a flight unless, since the beginning of the 12th calendar month before that service, that pilot has passed a flight check in one of the types of aircraft which that pilot is to fly. The flight check shall—

(1) Be given by an approved check pilot or by the Administrator;

(2) Consist of at least one flight over one route segment; and

(3) Include takeoffs and landings at one or more representative airports. In addition to the requirements of this paragraph, for a pilot authorized to conduct IFR operations, at least one flight shall be flown over a civil airway, an approved off-airway route, or a portion of either of them.

(b) The pilot who conducts the check shall determine whether the pilot being checked satisfactorily performs the duties and responsibilities of a pilot in command in operations under this Part, and shall so certify in the pilot training record.

(c) Each certificate holder shall establish in the manual required by § 135.21 a procedure which will ensure that each pilot who has not flown over a route and into an airport within the preceding 90 days will, before beginning the flight, become familiar with all available information required for the safe operation of that flight.

§ 135.301 Crewmember: tests and checks, grace provisions, training to accepted standards.

(a) If a crewmember who is required to take a test or a flight check under this Part, completes the test or flight check in the calendar month before or after the calendar month in which it is required, that crewmember is considered to have completed the test or check in the calendar month in which it is required.

(b) If a pilot being checked under this subpart fails any of the required maneuvers, the person giving the check may give additional training to the pilot during the course of the check. In addition to repeating the maneuvers failed, the person giving the check may require the pilot being checked to repeat any other maneuvers that are necessary to determine the pilot's proficiency. If the pilot being checked is unable to demonstrate satisfactory performance to the person conducting the check, the certificate holder may not use the pilot, nor may the pilot serve, as a flight crewmember in operations under this Part until the pilot has satisfactorily completed the check.

§ 135.503 Check pilot authorization: application and issue.

Each certificate holder desiring FAA approval of a check pilot shall submit a request in writing to the FAA Flight Standards District Office charged with the overall inspection of the certificate holder. The Administrator may issue a letter of authority to each check pilot if that pilot passes the appropriate oral and flight test. The letter of authority lists the tests and checks in this Part that the check pilot is qualified to give, and the cagetory, class and type aircraft, where appropriate, for which the check pilot is qualified.

Subpart H—Training

§ 135.321 Applicability and terms used.

(a) This subpart prescribes requirements for establishing and maintaining an approved training program for crewmembers, check airmen and instructors, and other operations personnel, and for the other training devices in the conduct of that program.

(b) For the purposes of this subpart, the following terms and definitions apply:

(1) *Initial training.* The training required for crewmembers who have not qualified and served in the same capacity on an aircraft.

(2) *Transition training.* The training required for crewmembers who have qualified and served in the same capacity on another aircraft.

(3) *Upgrade training.* The training required for crewmembers who have qualified and served as second in command on a particular aircraft type, before they serve as pilot in command on that aircraft.

(4) *Differences training.* The training required for crewmembers who have qualified and served on a particular type aircraft, when the Administrator finds differences training is necessary before a crewmember serves in the same capacity on a particular variation of that aircraft.

(5) *Recurrent training.* The training required for crewmembers to remain adequately trained and currently proficient for each aircraft, crewmember position, and type of operation in which the crewmember serves.

(6) *In flight.* The maneuvers, procedures, or functions that must be conducted in the aircraft.

§ 135.323 Training program: general.

(a) Each certificate holder required to have a training program under § 135.341 shall:

(1) Establish, obtain the appropriate initial and final approval of, and provide a training program that meets this subpart and that ensures that each crewmember, flight instructor, check airman, and each person assigned duties for the carriage and handling of hazardous materials (as defined in 49 CFR 171.8) is adequately trained to perform their assigned duties.

(2) Provide adequate ground and flight training facilities and properly qualified ground instructors for the training required by this subpart.

(3) Provide and keep current for each aircraft type used and, if applicable, the particular variations within the aircraft type, appropriate training material, examinations, forms, instructions, and procedures for use in conducting the training and checks required by this subpart.

(4) Provide enough flight instructors, check airmen, and simulator instructors to conduct required flight training and flight checks, and simulator training courses allowed under this subpart.

(b) Whenever a crewmember who is required to take recurrent training under this subpart completes the training in the calendar month before, or the calendar month after, the month in which that training is required, the crewmember is considered to have completed it in the calendar month in which it was required.

(c) Each instructor, supervisor, or check airman who is responsible for a particular ground training subject, segment of flight training, course of training, flight check, or competence check under this Part shall certify as to the proficiency and knowledge of the crewmember, flight instructor, or check airman concerned upon completion of that training or check. That certification shall be made a part of the crewmember's record. When the certification required by this paragraph is made by an entry in a computerized recordkeeping system, the certifying instructor, supervisor, or check airman, must be identified with that entry. However, the signature of the certifying instructor, supervisor, or check airman, is not required for computerized entries.

(d) Training subjects that apply to more than one aircraft or crewmember position and that have been satisfactorily completed during previous training while employed by the certificate holder for another aircraft or another crewmember position, need not be repeated during subsequent training other than recurrent training.

(e) Aircraft simulators and other training devices may be used in the certificate holder's training program if approved by the Administrator.

§ 135.325 Training program and revision: initial and final approval.

(a) To obtain initial and final approval of a training program, or a revision to an approved training program, each certificate holder must submit to the Administrator—

(1) An outline of the proposed or revised curriculum, that provides enough information for a preliminary evaluation of the proposed training program or revision; and

(2) Additional relevant information that may be requested by the Administrator.

(b) If the proposed training program or revision complies with this subpart, the Administrator grants initial approval in writing after which the certificate holder may conduct the training under that program. The Administrator then evaluates the effectiveness of the training program and advises the certificate holder of deficiencies, if any, that must be corrected.

(c) The Administrator grants final approval of the proposed training program or revision if the certificate holder shows that the training conducted under the initial approval in paragraph (b) of this section ensures that each person who successfully completes the training is adequately trained to perform that person's assigned duties.

(d) Whenever the Administrator finds that revisions are necessary for the continued adequacy of a training program that has been granted final approval, the certificate holder shall, after notification by the Administrator, make any changes in the program that are found necessary by the Administrator. Within 30 days after the certificate holder receives the notice, it may file a petition to reconsider the notice with the Administrator. The filing of a petition to reconsider stays the notice pending a decision by the Administrator. However, if the Administrator finds that there is an emergency that requires immediate action in the interest of safety, the Administrator may, upon a statement of the reasons, require a change effective without stay.

§ 135.327 Training program: curriculum.

(a) Each certificate holder must prepare and keep current a written training program curriculum for each type of aircraft for each crewmember required for that type aircraft. The curriculum must include ground and flight training required by this subpart.

(b) Each training program curriculum must include the following:

(1) A list of principal ground training subjects, including emergency training subjects, that are provided.

(2) A list of all the training devices, mock-ups, systems trainers, procedures trainers, or other training aids that the certificate holder will use.

(3) Detailed descriptions or pictorial displays of the approved normal, abnormal, and emergency maneuvers, procedures and functions that will be performed during each flight training phase or flight check, indicating those maneuvers, procedures and functions that are to be performed during the inflight portions of flight training and flight checks.

§ 135.329 Crewmember training requirements.

(a) Each certificate holder must include in its training program the following initial and transition ground training as appropriate to the particular assignment of the crewmember:

(1) Basic indoctrination ground training for newly hired crewmembers including instruction in at least the—

(i) Duties and responsibilities of crewmembers as applicable;

(ii) Appropriate provisions of this chapter;

(iii) Contents of the certificate holder's operating certificate and operations specifications (not required for flight attendants); and

(iv) Appropriate portions of the certificate holder's operating manual.

(2) The initial and transition ground training in §§ 135.345 and 135.349, as applicable.

(3) Emergency training in § 135.331.

(b) Each training program must provide the initial and transition flight training in § 135.347, as applicable.

(c) Each training program must provide recurrent ground and flight training in § 135.351.

(d) Upgrade training in §§ 135.345 and 135.347 for a particular type aircraft may be included in the training program for crewmembers who have qualified and served as second in command on that aircraft.

(e) In addition to initial, transition, upgrade and recurrent training, each training program must provide ground and flight training, instruction, and practice necessary to ensure that each crewmember—

(1) Remains adequately trained and currently proficient for each aircraft, crewmember position, and type of operation in which the crewmember serves; and

(2) Qualifies in new equipment, facilities, procedures, and techniques, including modifications to aircraft.

§ 135.331 Crewmember emergency training.

(a) Each training program must provide emergency training under this section for each aircraft type, model, and configuration, each crewmember, and each kind of operation conducted, as appropriate for each crewmember and the certificate holder.

(b) Emergency training must provide the following:

(1) Instruction in emergency assignments and procedures, including coordination among crewmembers.

(2) Individual instruction in the location, function, and operation of emergency equipment including—

(i) Equipment used in ditching and evacuation;

(ii) First aid equipment and its proper use; and

(iii) Portable fire extinguishers, with emphasis on the type of extinguisher to be used on different classes of fires.

(3) Instruction in the handling of emergency situations including—

(i) Rapid decompression;

(ii) Fire in flight or on the surface and smoke control procedures with emphasis on electrical equipment and related circuit breakers found in cabin areas;

(iii) Ditching and evacuation;

(iv) Illness, injury, or other abnormal situations involving passengers or crewmembers; and

(v) Hijacking and other unusual situations.

(4) Review of the certificate holder's previous aircraft accidents and incidents involving actual emergency situations.

(c) Each crewmember must perform at least the following emergency drills, using the proper emergency equipment and procedures, unless the Administrator finds that, for a particular drill, the crewmember can be adequately trained by demonstration:

(1) Ditching, if applicable.

(2) Emergency evacuation.

(3) Fire extinguishing and smoke control.

(4) Operation and use of emergency exits, including deployment and use of evacuation chutes, if applicable.

(5) Use of crew and passenger oxygen.

(6) Removal of life rafts from the aircraft, inflation of the life rafts, use of life lines, and boarding of passengers and crew, if applicable.

(7) Donning and inflation of life vests and the use of other individual flotation devices, if applicable.

(d) Crewmembers who serve in operations above 25,000 feet must receive instruction in the following:

(1) Respiration.

(2) Hypoxia.

(3) Duration of consciousness without supplemental oxygen at altitude.

(4) Gas expansion.

(5) Gas bubble formation.

(6) Physical phenomena and incidents of decompression.

§ 135.333 Training requirements: handling and carriage of hazardous materials.

(a) Except as provided in paragraph (d) of this section, no certificate holder may use any person to perform, and no person may perform, any assigned duties and responsibilities for the handling or carriage of hazardous materials (as defined in 49 CFR 171.8), unless within the preceding 12 calendar months that person has satisfactorily completed initial or recurrent training in an appropriate training program established by the certificate holder, which includes instruction regarding—

(1) The proper shipper certification, packaging, marking, labeling, and documentation for hazardous materials; and

(2) The compatibility, loading, storage, and handling characteristics of hazardous materials.

(b) Each certificate holder shall maintain a record of the satisfactory completion of the initial and recurrent training given to crewmembers an ground personnel who perform assigned duties and responsibilities for the handling and carriage of hazardous materials.

(c) Each certificate holder that elects not to accept hazardous materials shall ensure that each crewmember is adequately trained to recognize those items classified as hazardous materials.

(d) If a certificate holder operates into or out of airports at which trained employees or contract personnel are not available, it may use persons not meeting the requirements of paragraphs (a) and (b) of this section to load, offload, or otherwise handle hazardous materials if these persons are supervised by a crewmember who is qualified under paragraphs (a) and (b) of this section.

§ 135.335 Approval of aircraft simulators and other training devices.

(a) Training courses using aircraft simulators and other training devices may be included in the certificate holder's training program if approved by the Administrator.

(b) Each aircraft simulator and other training device that is used in a training course or in checks required under this subpart must meet the following requirements:

(1) It must be specifically approved for—

[(i) The certificate holder; and

[(ii) The particular maneuver, procedure, or crewmember function involved.]

(2) It must maintain the performance, functional, and other characteristics that are required for approval.

[(3) Additionally, for aircraft simulators, it must be—

[(i) Approved for the type aircraft and, if applicable, the particular variation within type for which the training or check is being conducted; and

[(ii) Modified to conform with any modification to the aircraft being simulated that changes the performance, functional, or other characteristics required for approval.

[(c) A particular aircraft simulator or other training device may be used by more than one certificate holder.

[(d) In granting initial and final approval of training programs or revisions to them, the Administrator considers the training devices, methods, and procedures listed in the certificate holder's curriculum under § 135.327.]

§ 135.337 Training program: check airmen and instructor qualifications.

(a) No certificate holder may use a person, nor may any person serve, as a flight instructor or check airman in a training program established under this subpart unless, for the particular aircraft type involved, that person—

(1) Holds the airman certificate and ratings that must be held to serve as a pilot in command in operations under this Part;

(2) Has satisfactorily completed the appropriate training phases for the aircraft, including recurrent training, required to serve as a pilot in command in operations under this Part;

(3) Has satisfactorily completed the appropriate proficiency or competency checks required to serve as a pilot in command in operations under this Part;

(4) Has satisfactorily completed the applicable training requirements of § 135.339;

(5) Holds a Class I or Class II medical certificate required to serve as a pilot in command in operations under this Part;

(6) In the case of a check airman, has been approved by the Administrator for the airman duties involved; and

(7) In the case of a check airman used in an aircraft simulator only, holds a Class III medical certificate.

(b) No certificate holder may use a person, nor may any person serve, as a simulator instructor for a course of training given in an aircraft simulator under this subpart unless that person—

(1) Holds at least a commercial pilot certificate; and

(2) Has satisfactorily completed the following as evidenced by the approval of a check airman—

(i) Appropriate initial pilot and flight instructor ground training under this subpart; and

(ii) A simulator flight training course in the type simulator in which that person instructs under this subpart.

§ 135.339 Check airmen and flight instructors: initial and transition training.

(a) The initial and transition ground training for pilot check airmen must include the following:

(1) Pilot check airman duties, functions, and responsibilities.

(2) The applicable provisions of this chapter and certificate holder's policies and procedures.

(3) The appropriate methods, procedures, and techniques for conducting the required checks.

(4) Proper evaluation of pilot performance including the detection of—

(i) Improper and insufficient training; and

(ii) Personal characteristics that could adversely affect safety.

(5) The appropriate corrective action for unsatisfactory checks.

(6) The approved methods, procedures, and limitations for performing the required normal, abnormal, and emergency procedures in the aircraft.

(b) The initial and transition ground training for pilot flight instructors, except for the holder of a valid flight instructor certificate, must include the following:

(1) The fundamental principles of the teaching-learning process.

(2) Teaching methods and procedures.

(3) The instructor-student relationship.

(c) The initial and transition flight training for pilot check airmen and pilot flight instructors must include the following:

(1) Enough inflight training and practice in conducting flight checks from the left and right pilot seats in the required normal, abnormal, and emergency maneuvers to ensure that person's competence to conduct the pilot flight checks and flight training under this subpart.

(2) The appropriate safety measures to be taken from either pilot seat for emergency situations that are likely to develop in training.

(3) The potential results of improper or untimely safety measures during training.

The requirements of paragraphs (2) and (3) of this paragraph may be accomplished in flight or in an approved simulator.

§ 135.341 Pilot and flight attendant crewmember training programs.

[(a) Each certificate holder, other than one who uses only one pilot in the certificate holder's operations,] shall establish and maintain an approved pilot training program, and each certificate holder who uses a flight attendant crewmember shall establish and maintain an approved flight attendant training program, that is appropriate to the operations to which each pilot and flight attendant is to be assigned, and will ensure that they are adequately trained to meet the applicable knowledge and practical testing requirements of §§ 135.293 through 135.301. However, the Administrator may authorize a deviation from this section if the Administrator finds that, because of the limited size and scope of the operation, safety will allow a deviation from these requirements.

(b) Each certificate holder required to have a training program by paragraph (a) of this section shall include in that program ground and flight training curriculums for—(1) Initial training; (2) Transition training; (3) Upgrade training; (4) Differences training; and (5) Recurrent training.

(c) Each certificate holder required to have a training program by paragraph (a) of this section shall provide current and appropriate study materials for use by each required pilot and flight attendant.

(d) The certificate holder shall furnish copies of the pilot and flight attendant crewmember training program, and all changes and additions, to the assigned representative of the Administrator. If the certificate holder uses training facilities of other persons, a copy of those training programs or appropriate portions used for those facilities shall also be furnished. Curricula that follow FAA published curricula may be cited by reference in the copy of the training program furnished to the representative of the Administrator and need not be furnished with the program.

§ 135.343 Crewmember initial and recurrent training requirements.

No certificate holder may use a person, nor may any person serve, as a crewmember in operations under this part unless that crewmember has completed the appropriate initial or recurrent training phase of the training program appropriate to the type of operation in which the crewmember is to serve since the beginning of the 12th calendar month before that service. This section does not apply to a certificate holder that uses only one pilot in the certificate holder's operations.

§ 135.345 Pilots: initial, transition, and upgrade ground training.

Initial, transition, and upgrade ground training for pilots must include instruction in at least the following, as applicable to their duties:

(a) General subjects—

(1) The certificate holder's flight locating procedures;

(2) Principles and methods for determining weight and balance, and runway limitations for takeoff and landing;

(3) Enough meteorology to ensure a practical knowledge of weather phenomena, including the principles of frontal systems, icing, fog, thunderstorms, windshear and, if appropriate, high altitude weather situations;

(4) Air traffic control systems, procedures, and phraseology;

(5) Navigation and the use of navigational aids, including instrument approach procedures;

(6) Normal and emergency communication procedures;

(7) Visual cues before and during descent below DH or MDA; and

(8) Other instructions necessary to ensure the pilot's competence.

(b) For each aircraft type—

(1) A general description;

(2) Performance characteristics;

(3) Engines and propellers;

(4) Major components;

(5) Major aircraft systems (i.e., flight controls, electrical, and hydraulic), other systems, as appropriate, principles of normal, abnormal, and emergency operations, appropriate procedures and limitations;

(6) [Procedures for—

[(i) Recognizing and avoiding severe weather situations;

[(ii) Escaping from severe weather situations, in case of inadvertent encounters, including low-altitude windshear (except that rotorcraft pilots are not required to be trained in escaping from low-altitude windshear); and

[(iii) Operating in or near thunderstorms (including best penetrating altitudes), turbulent air (including clear air turbulence), icing, hail, and other potentially hazardous meteorological conditions;]

(7) Operating limitations;

(8) Fuel consumption and cruise control;

(9) Flight planning;

(10) Each normal and emergency procedure; and

(11) The approved Aircraft Flight Manual, or equivalent.

§ 135.347 Pilots: initial, transition, upgrade, and differences flight training.

(a) Initial, transition, upgrade, and differences training for pilots must include flight and practice in each of the maneuvers and procedures in the approved training program curriculum.

(b) The maneuvers and procedures required by paragraph (a) of this section must be performed in flight, except to the extent that certain maneuvers and procedures may be performed in an aircraft simulator, or an appropriate training device, as allowed by this subpart.

(c) If the certificate holder's approved training program includes a course of training using an aircraft simulator or other training device, each pilot must successfully complete—

(1) Training and practice in the simulator or training device in at least the maneuvers and procedures in this subpart that are capable of being performed in the aircraft simulator or training device; and

(2) A flight check in the aircraft or a check in the simulator or training device to the level of proficiency of a pilot in command or second in command, as applicable, in at least the maneuvers and procedures that are capable of being performed in an aircraft simulator or training device.

§ 135.349 Flight attendants: initial and transition ground training.

Initial and transition ground training for flight attendants must include instruction in at least the following—

(a) General subjects—

(1) The authority of the pilot in command; and

(2) Passenger handling, including procedures to be followed in handling deranged persons or other persons whose conduct might jeopardize safety.

(b) For each aircraft type—

(1) A general description of the aircraft emphasizing physical characteristics that may have a bearing on ditching, evacuation, and inflight emergency procedures and on other related duties;

(2) The use of both the public address system and the means of communicating with other flight crewmembers, including emergency means in the case of attempted hijacking or other unusual situations; and

(3) Proper use of electrical galley equipment and the controls for cabin heat and ventilation.

§ 135.351 Recurrent training.

(a) Each certificate holder must ensure that each crewmember receives recurrent training and is adequately trained and currently proficient for the type aircraft and crewmember position involved.

(b) Recurrent ground training for crewmembers must include at least the following:

(1) A quiz or other review to determine the crewmember's knowledge of the aircraft and crewmember position involved.

(2) Instruction as necessary in the subjects required for initial ground training by this subpart, as appropriate, including low-altitude windshear training as prescribed in § 135.345 of this part and emergency training.

(c) Recurrent flight training for pilots must include, at least, flight training in the maneuvers or procedures in this subpart, except that satisfactory completion of the check required by § 135.293 within the preceding 12 calendar months may be substituted for recurrent flight training.

[§ 135.353 Prohibited drugs.]

[(a) Each certificate holder or operator shall provide each employee performing a function listed in Appendix I to Part 121 of this chapter and his or her supervisor with the training specified in that appendix.

[(b) No certificate holder or operator may use any contractor to perform a function specified in Appendix I to Part 121 of this chapter unless that contractor provides each of its employees performing that function for the certificate holder or the operator and his or her supervisor with the training specified in that appendix.]

Subpart I—Airplane Performance Operating Limitations

§ 135.361 Applicability.

(a) This subpart prescribes airplane performance operating limitations applicable to the operation of the categories of airplanes listed in § 135.363 when operated under this part.

(b) For the purpose of this subpart, "effective length of the runway," for landing means the distance from the point at which the obstruction clearance plane associated with the approach end of the runway intersects the centerline of the runway to the far end of the runway.

(c) For the purpose of this subpart, "obstruction clearance plane" means a plane sloping upward from the runway at a slope of 1:20 to the horizontal, and tangent to or clearing all obstructions within a specified area surrounding the runway as shown in a profile view of that area. In the plan view, the centerline of the specified area coincides with the centerline of the runway, beginning at the point where the obstruction clearance plane intersects the centerline of the runway and proceeding to a point at least 1,500 feet from the beginning point. After that the centerline coincides with the takeoff path over the ground for the runway (in the case of takeoffs) or with the instrument approach counterpart (for landings), or, where the applicable one of these paths has not been established, it proceeds consistent with turns of at least 4,000-foot radius until a point is reached beyond which the obstruction clearance plane clears all obstructions. This area extends laterally 200 feet on each side of the centerline at the point where the obstruction clearance plane intersects the runway and continues at this width to the end of the runway; then it increases uniformly to 500 feet on each side of the centerline at a point 1,500 feet from the intersection of the obstruction clearance plane with the runway; after that it extends laterally 500 feet on each side of the centerline.

§ 135.363 General.

(a) Each certificate holder operating a reciprocating engine powered large transport category airplane shall comply with §§ 135.365 through 135.377.

(b) Each certificate holder operating a turbine engine powered large transport category airplane shall comply with §§ 135.379 through 135.387, except that when it operates a turbo-propeller-powered large transport category airplane certificated after August 29, 1959, but previously type certificated with the same number of reciprocating engines, it may comply with §§ 135.365 through 135.377.

(c) Each certificate holder operating a large nontransport category airplane shall comply with §§ 135.389 through 135.395 and any determination of compliance must be based only on approved performance data. For the purpose of this subpart, a large nontransport category airplane is an airplane that was type certificated before July 1, 1942.

(d) Each certificate holder operating a small transport category airplane shall comply with § 135.397.

(e) Each certificate holder operating a small nontransport category airplane shall comply with § 135.399.

(f) The performance data in the Airplane Flight Manual applies in determining compliance with §§ 135.365 through 135.387. Where conditions are different from those on which the performance data is based, compliance is determined by interpolation or by computing the effects of change in the specific variables, if the results of the interpolation or computations are substantially as accurate as the results of direct tests.

(g) No person may take off a reciprocating engine powered large transport category airplane at a weight that is more than the allowable weight for the runway being used (determined under the runway takeoff limitations of the transport category operating rules of this subpart) after taking into account the temperature operating correction factors in § 4a.749a-T or § 4b.117 of the Civil Air Regulations in effect on January 31, 1965, and in the applicable Airplane Flight Manual.

(h) The Administrator may authorize in the operations specifications deviations from this subpart if special circumstances make a literal observance of a requirement unnecessary for safety.

(i) The 10-mile width specified in §§ 135.369 through 135.373 may be reduced to 5 miles, for not more than 20 miles, when operating under VFR or where navigation facilities furnish reliable and accurate identification of high ground and obstructions located outside of 5 miles, but within 10 miles, on each side of the intended track.

[(j) Each certificate holder operating a commuter category airplane shall comply with § 135.398.]

§ 135.365 Large transport category airplanes: reciprocating engine powered: weight limitations.

(a) No person may take off a reciprocating engine powered large transport category airplane from an airport located at an elevation outside of the range for which maximum takeoff weights have been determined for that airplane.

(b) No person may take off a reciprocating engine powered large transport category airplane for an airport of intended destination that is located at an elevation outside of the range for which maximum landing weights have been determined for that airplane.

(c) No person may specify, or have specified, an alternate airport that is located at an elevation outside of the range for which maximum landing weights have been determined for the reciprocating engine powered large transport category airplane concerned.

(d) No person may take off a reciprocating engine powered large transport category airplane at a weight more than the maximum authorized takeoff weight for the elevation of the airport.

(e) No person may take off a reciprocating engine powered large transport category airplane if its weight on arrival at the airport of destination will be more than the maximum authorized landing weight for the elevation of that airport, allowing for normal consumption of fuel and oil en route.

§ 135.367 Large transport category airplanes: reciprocating engine powered: takeoff limitations.

(a) No person operating a reciprocating engine powered large transport category airplane may take off that airplane unless it is possible—

(1) To stop the airplane safely on the runway, as shown by the accelerate-stop distance data, at any time during take off until reaching critical engine failure speed;

(2) If the critical engine fails at any time after the airplane reaches critical-engine failure speed V_1, to continue the takeoff and reach a height of 50 feet, as indicated by the takeoff path data, before passing over the end of the runway; and

(3) To clear all obstacles either by at least 50 feet vertically (as shown by the takeoff path data) or 200 feet horizontally within the airport boundaries and 300 feet horizontally beyond the boundaries, without banking before reaching a height of 50 feet (as shown by the takeoff path data) and after that without banking more than 15 degrees.

(b) In applying this section, corrections must be made for any runway gradient. To allow for wind effect, takeoff data based on still air may be corrected by taking into account not more than 50 percent of any reported headwind component and not less than 150 percent of any reported tailwind component.

§ 135.369 Large transport category airplanes: reciprocating engine powered: en route limitations: all engines operating.

(a) No person operating a reciprocating engine powered large transport category airplane may take off that airplane at a weight, allowing for normal consumptoin of fuel and oil, that does not allow a rate of climb (in feet per minute), with all engines operating, of at least 6.90 V_{S0} (that is, the number of feet per minute obtained by multiplying the number of knots by 6.90) at an altitude of at least 1,000 feet above the highest ground or obstruction within ten miles of each side of the intended track.

(b) This section does not apply to large transport category airplanes certificated under Part 4a of the Civil Air Regulations.

§ 135.371 Large transport category airplanes: reciprocating engine powered: en route limitations: one engine inoperative.

(a) Except as provided in paragraph (b) of this section, no person operating a reciprocating engine powered large transport category airplane may take off that airplane at a weight, allowing for normal consumption of fuel and oil, that does not allow a rate of climb (in feet per minute), with one engine inoperative, of at least $(0.079-0.106/N)\ Vs_0{}^2$ (where N is the number of engines installed and Vs_0 is expressed in knots) at an altitude of least 1,000 feet above the highest ground or obstruction within 10 miles of each side of the intended track. However, for the purposes of this paragraph the rate of climb for transport category airplanes certificated under Part 4a of the Civil Air Regulations is $0.026\ Vs_0{}^2$.

(b) In place of the requirements of paragraph (a) of this section, a person may, under an approved procedure, operate a reciprocating engine powered large transport category airplane at an all-engine-operating altitude that allows the airplane to continue, after an engine failure, to an alternate airport where a landing can be made under § 135.377, allowing for normal consumpton of fuel and oil. After the assumed failure, the flight path must clear the ground and any obstruction within five miles on each side of the intended track by at least 2,000 feet.

(c) If an approved procedure under paragraph (b) of this section is used, the certificate holder shall comply with the following:

(1) The rate of clim (as prescribed in the Airplane Flight Manual for the appropriate weight and altitude) used in calculating the airplane's flight path shall be diminished by an amount in feet per minute, equal to $(0.079-0.106/N)\ Vs_0{}^2$ (when N is the number of engines installed and Vs_0, is expressed in knots) for airplanes certificated under Part 25 of this chapter and by $0.026\ Vs_0{}^2$ for airplanes certificated under Part 4a of the Civil Air Regulations.

(2) The all-engines-operating altitude shall be sufficient so that in the event the critical engine becomes inoperative at any point along the route, the flight will be able to proceed to a predetermined alternate airport by use of this procedure. In determining the takeoff weight, the airplane is assumed to pass over the critical obstruction following engine failure at a point no closer to the critical obstruction than the nearest approved radio navigational fix, unless the Administrator approves a procedure established on a different basis upon finding that adequate operational safeguards exist.

(3) The airplane must meet the provisions of paragraph (a) of this section at 1,000 feet above the airport used as an alternate in this procedure.

(4) The procedure must include an approved method of accounting for winds and temperatures that would otherwise adversely affect the flight path.

(5) In complying with this procedure, fuel jettisoning is allowed if the certificate holder shows that it has an adequate training program, that proper instructions are given to the flight crew, and all other precautions are taken to ensure a safe procedure.

(6) The certificate holder and the pilot in command shall jointly elect an alternate airport for which the appropriate weather reports or forecasts, or any combination of them, indicate that weather conditions will be at or above the alternate weather minimum specified in the certificate holder's operations specifications for that airport when the flight arrives.

§ 135.373 Part 25 transport category airplanes with four or more engines: reciprocating engine powered: en route limitations: two engines inoperative.

(a) No person may operate an airplane certificated under Part 25 and having four or more engines unless—

(1) There is no place along the intended track that is more than 90 minutes (with all engines operating at cruising power) from an airport that meets § 135.377; or

(2) It is operated at a weight allowing the airplane, with the two critical engines inoperative, to climb at 0.013 $V_{S_0}^2$ feet per minute (that is, the number of feet per minute obtained by multiplying the number of knots squared by 0.013) at an altitude of 1,000 feet above the highest ground or obstruction within 10 miles on each side of the intended track, or at an altitude of 5,000 feet, whichever is higher.

(b) For the purposes of paragraph (a)(2) of this section, it is assumed that—

(1) The two engines fail at the point that is most critical with respect to the takeoff weight;

(2) Consumption of fuel and oil is normal with all engines operating up to the point where the two engines fail with two engines operating beyond that point;

(3) Where the engines are assumed to fail at an altitude above the prescribed minimum altitude, compliance with the prescribed rate of climb at the prescribed minimum altitude need not be shown during the descent from the cruising altitude to the prescribed minimum altitude, if those requirements can be met once the prescribed minimum altitude is reached, and assuming descent to be along a net flight path and the rate of descent to be $0.013V_{S_0}^2$ greater than the rate in the approved performance data; and

(4) If fuel jettisoning is provided, the airplane's weight at the point where the two engines fail is considered to be not less than that which would include enough fuel to proceed to an airport meeting § 135.377 and to arrive at an altitude of at least 1,000 feet directly over that airport.

§ 135.375 Large transport category airplanes: reciprocating engine powered: landing limitations: destination airports.

(a) Except as provided in paragraph (b) of this section, no person operating a reciprocating engine powered large transport category airplane may take off that airplane, unless its weight on arrival, allowing for normal consumption of fuel and oil in flight, would allow a full stop landing at the intended destination within 60 percent of the effective length of each runway described below from a point 50 feet directly above the intersection of the obstruction clearance plane and the runway. For the purposes of determining the allowable landing weight at the destination airport the following is assumed:

(1) The airplane is landed on the most favorable runway and in the most favorable direction in still air.

(2) The airplane is landed on the most suitable runway considering the probable wind velocity and direction (forecast for the expected time of arrival), the ground handling characteristics of the type of airplane, and other conditions such as landing aids and terrain, and allowing for the effect of the landing path and roll of not more than 50 percent of the headwind component or not less than 150 percent of the tailwind component.

(b) An airplane that would be prohibited from being taken off because it could not meet paragraph (a)(2) of this section may be taken off if an alternate airport is selected that meets all of this section except that the airplane can accomplish a full stop landing within 70 percent of the effective length of the runway.

§ 135.377 Large transport category airplanes: reciprocating engine powered: landing limitations: alternate airports.

No person may list an airport as an alternate airport in a flight plan unless the airplane (at the weight anticipated at the time of arrival at the airport), based on the assumptions in § 135.375(a)(1) and (2), can be brought to a full stop landing within 70 percent of the effective length of the runway.

§ 135.379 Large transport category airplanes: turbine engine powered: takeoff limitations.

(a) No person operating a turbine engine powered large transport category airplane may take off that airplane at a weight greater than that listed in the Airplane Flight Manual for the elevation of the airport and for the ambient temperature existing at takeoff.

(b) No person operating a turbine engine powered large transport category airplane certificated after August 26, 1957, but before August 30, 1959 (SR422, 422A), may take off that airplane at a weight greater than that listed in the Airplane Flight Manual for the minimum distance required for takeoff. In the case of an airplane certificated after September 30, 1958 (SR422A, 422B), the takeoff distance may include a clearway distance but the clearway distance included may not be greater than one-half of the takeoff run.

(c) No person operating a turbine engine powered large transport category airplane certificated after August 29, 1959 (SR422B), may take off that airplane at a weight greater than that listed in the Airplane Flight Manual at which compliance with the following may be shown:

(1) The accelerate-stop distance, as defined in § 25.109 of this chapter, must not exceed the length of the runway plus the length of any stopway.

(2) The takeoff distance must not exceed the length of the runway plus the length of any clearway except that the length of any clearway included must not be greater than one-half the length of the runway.

(3) The takeoff run must not be greater than the length of the runway.

(d) No person operating a turbine engine powered large transport category airplane may take off that airplane at a weight greater than that listed in the Airplane Flight Manual—

(1) For an airplane certificated after August 26, 1957, but before October 1, 1958 (SR422), that allows a takeoff path that clears all obstacles either by at least (35+0.01 D) feet vertically (D is the distance along the intended flight path from the end of the runway in feet), or by at least 200 feet horizontally within the airport boundaries and by at least 300 feet horizontally after passing the boundaries; or

(2) For an airplane certificated after September 30, 1958 (SR422A, 422B), that allows a net takeoff flight path that clears all obstacles either by a height of at least 35 feet vertically, or by at least 200 feet horizontally within the airport boundaries and by at least 300 feet horizontally after passing the boundaries.

(e) In determining maximum weights, minimum distances and flight paths under paragraphs (a) through (d) of this section, correction must be made for the runway to be used, the elevation of the airport, the effective runway gradient, and the ambient temperature and wind component at the time of takeoff.

(f) For the purposes of this section, it is assumed that the airplane is not banked before reaching a height of 50 feet, as shown by the takeoff path or net takeoff flight path data (as appropriate) in the Airplane Flight Manual, and after that the maximum bank is not more than 15 degrees.

(g) For the purposes of this section, the terms, "takeoff distance," "takeoff run," "net takeoff flight path," have the same meanings as set forth in the rules under which the airplane was certificated.

§ 135.381 Large transport category airplanes: turbine engine powered: en route limitations: one engine inoperative.

(a) No person operating a turbine engine powered large transport category airplane may take off that airplane at a weight, allowing for normal consumption of fuel and oil, that is greater than that which (under the approved, one engine inoperative, en route net flight path data in the Airplane Flight Manual for that airplane) will allow compliance with subparagraph (1) or (2) of this paragraph, based on the ambient temperatures expected en route.

(1) There is a positive slope at an altitude of at least 1,000 feet above all terrain and obstructions within five statute miles on each side of the intended track, and, in addition, if that airplane was certificated after August 29, 1958 (SR422B), there is a positive slope at 1,500 feet above the airport where the airplane is assumed to land after an engine fails.

(2) The net flight path allows the airplane to continue flight from the cruising

altitude to an airport where a landing can be made under § 135.387 clearing all terrain and obstructions within five statute miles of the intended track by at least 2,000 feet vertically and with a positive slope at 1,000 feet above the airport where the airplane lands after an engine fails, or, if that airplane was certificated after September 30, 1958 (SR422A, 422B), with a positive slope at 1,500 feet above the airport where the airplane lands after an engine fails.

(b) For the purpose of paragraph (a)(2) of this section, it is assumed that—

(1) The engine fails at the most critical point en route;

(2) The airplane passes over the critical obstruction, after engine failure at a point that is no closer to the obstruction than the approved radio navigation fix, unless the Administrator authorizes a different procedure based on adequate operational safeguards;

(3) An approved method is used to allow for adverse winds;

(4) Fuel jettisoning will be allowed if the certificate holder shows that the crew is properly instructed, that the training program is adequate, and that all other precautions are taken to ensure a safe procedure;

(5) The alternate airport is selected and meets the prescribed weather minimums; and

(6) The consumption of fuel and oil after engine failure is the same as the consumption that is allowed for in the approved net flight path data in the Airplane Flight Manual.

§ 135.383 Large transport category airplanes: turbine engine powered: en route limitations: two engines inoperative.

(a) Airplanes certificated after August 26, 1957, but before October 1, 1958 (SR422). No person may operate a turbine engine powered large transport category airplane along an intended route unless that person complies with either of the following:

(1) There is no place along the intended track that is more than 90 minutes (with all engines operating at cruising power) from an airport that meets § 135.387.

(2) Its weight, according to the two-engine-inoperative, en route, net flight path data in the Airplane Flight Manual, allows the airplane to fly from the point where the two engines are assumed to fail simultaneously to an airport that meets § 135.387, with a net flight path (considering the ambient temperature anticipated along the track) having a positive slope at an altitude of at least 1,000 feet above all terrain and obstructions within five statute miles on each side of the intended track, or at an altitude of 5,000 feet, whichever is higher.

For the purposes of paragraph (2) of this paragraph, it is assumed that the two engines fail at the most critical point en route, that if fuel jettisoning is provided, the airplane's weight at the point where the engines fail includes enough fuel to continue to the airport and to arrive at an altitude of at least 1,000 feet directly over the airport, and that the fuel and oil consumption after engine failure is the same as the consumption allowed for in the net flight path data in the Airplane Flight Manual.

(b) Airplanes certificated after September 30, 1958, but before August 30, 1959 (SR422A). No person may operate a turbine engine powered large transport category airplane along an intended route unless that person complies with either of the following:

(1) There is no place along the intended track that is more than 90 minutes (with all engines operating at cruising power) from an airport that meets § 135.387.

(2) Its weight, according to the two-engine-inoperative, en route, net flight path data in the Airplane Flight Manual allows the airplane to fly from the point where the two engines are assumed to fail simultaneously to an airport that meets § 135.387 with a net flight path (considering the ambient temperatures anticipated along the track) having a positive slope at an altitude of at least 1,000 feet above all terrain and obstructions within five statute miles on each side of the intended track, or at an altitude of 2,000 feet, whichever is higher.

For the purpose of paragraph (2) of this paragraph, it is assumed that the two engines fail at the most critical point en route, that the airplane's weight at the point where the engines fail includes enough fuel to continue to the airport, to arrive at an altitude of at least 1,500 feet directly over the airport, and after that to fly for 15 minutes at cruise power or thrust, or both, and that the consumption of fuel and oil after engine failure is the same as the consumption allowed for in the net flight path data in the Airplane Flight Manual.

(c) Aircraft certificated after August 29, 1959 (SR422B). No person may operate a turbine engine powered large transport category airplane along an intended route unless that person complies with either of the following:

(1) There is no place along the intended track that is more than 90 minutes (with all engines operating at cruising power) from an airport that meets § 135.387.

(2) Its weight, according to the two-engine-inoperative, en route, net flight path data in the Airplane Flight Manual, allows the airplane to fly from the point where the two engines are assumed to fail simultaneously to an airport that meets § 135.387, with the net flight path (considering the ambient temperatures anticipated along the track) clearing vertically by at least 2,000 feet all terrain and obstructions within five statute miles on each side of the intended track. For the purposes of this paragraph, it is assumed that—

(i) The two engines fail at the most critical point en route;

(ii) The net flight path has a positive slope at 1,500 feet above the airport where the landing is assumed to be made after the engines fail;

(iii) Fuel jettisoning will be approved if the certificate holder shows that the crew is properly instructed, that the training program is adequate, and that all other precautions are taken to ensure a safe procedure;

(iv) The airplane's weight at the point where the two engines are assumed to fail provides enough fuel to continue to the airport, to arrive at an altitude of at least 1,500 feet directly over the airport, and after that to fly for 15 minutes at cruise power or thrust, or both; and

(v) The consumption of fuel and oil after the engines fail is the same as the consumption that is allowed for in the net flight path data in the Airplane Flight Manual.

§ 135.385 Large transport category airplanes: turbine engine powered: landing limitations: destination airports.

(a) No person operating a turbine engine powered large transport category airplane may take off that airplane at a weight that (allowing for normal consumption of fuel and oil in flight to the destination or alternate airport) the weight of the airplane on arrival would exceed the landing weight in the Airplane Flight Manual for the elevation of the destination or alternate airport and the ambient temperature anticipated at the time of landing.

(b) Except as provided in paragraph (c), (d), or (e) of this section, no person operating a turbine engine powered large transport category airplane may take off that airplane unless its weight on arrival, allowing for normal consumption of fuel and oil in flight (in accordance with the landing distance in the Airplane Flight Manual for the elevation of the destination airport and the wind conditions anticipated there at the time of landing), would allow a full stop landing at the intended destination airport within 60 percent of the effective length of each runway described below from a point 50 feet above the intersection of the obstruction clearance plane and the runway. For the purpose of determining the allowable landing weight at the destination airport the following is assumed:

(1) The airplane is landed on the most favorable runway and in the most favorable direction, in still air.

(2) The airplane is landed on the most suitable runway considering the probable wind velocity and direction and the ground handling characteristics of the airplane, and considering other conditions such as landing aids and terrain.

(c) A turbopropeller powered airplane that would be prohibited from being taken off because it could not meet paragraph (b)(2) of this section, may be taken off if an alternate airport is selected that meets all of this section except that the airplane can accomplish a full stop landing within 70 percent of the effective length of the runway.

(d) Unless, based on a showing of actual operating landing techniques on wet runways, a shorter landing distance (but never less than that required by paragraph (b) of this section) has been approved for a specific type and model airplane and included in the Airplane Flight Manual, no person may take off a turbojet airplane when the appropriate weather reports or forecasts, or any combination of them, indicate that the runways at the destination airport may be wet or slippery at the estimated time of arrival unless the effective runway length at the destination airport is at least 115 percent of the runway length required under paragraph (b) of this section.

(e) A turbojet airplane that would be prohibited from being taken off because it could not meet paragraph (b)(2) of this section may be taken off if an alternate airport is selected that meets all of paragraph (b) of this section.

§ 135.387 Large transport category airplanes: turbine engine powered: landing limitations: alternate airports.

No person may select an airport as an alternate airport for a turbine engine powered large transport category airplane unless (based on the assumption in § 135.385(b)) that airplane, at the weight anticipated at the time of arrival, can be brought to a full stop landing within 70 percent of the effective length of the runway for turbopropeller-powered airplanes and 60 percent of the effective length of the runway for turbojet airplanes, from a point 50 feet above the intersection of the obstruction clearance plane and the runway.

§ 135.389 Large nontransport category airplanes: takeoff limitations.

(a) No person operating a large nontransport category airplane may take off that airplane at a weight greater than the weight that would allow the airplane to be brought to a safe stop within the effective length of the runway, from any point during the takeoff before reaching 105 percent of minimum control speed (the minimum speed at which an airplane can be safely controlled in flight after an engine becomes inoperative) or 115 percent of the power off stalling speed in the takeoff configuration, whichever is greater.

(b) For the purposes of this section—

(1) It may be assumed that takeoff power is used on all engines during the acceleration;

(2) Not more than 50 percent of the reported headwind component, or not less than 150 percent of the reported tailwind component, may be taken into account;

(3) The average runway gradient (the difference between the elevations of the endpoints of the runway divided by the total length) must be considered if it is more than one-half of one percent;

(4) It is assumed that the airplane is operating in standard atmosphere; and

(5) For takeoff, "effective length of the runway" means the distance from the end of the runway at which the takeoff is started to a point at which the obstruction clearance plane associated with the other end of the runway intersects the runway centerline.

§ 135.391 Large nontransport category airplanes: en route limitations: one engine inoperative.

(a) Except as provided in paragraph (b) of this section, no person operating a large nontransport category airplane may take off that airplane at a weight that does not allow a rate of climb of at least 50 feet a minute, with the critical engine inoperative, at an altitude of at least 1,000 feet above the highest obstruction within five miles on each side of the intended track, or 5,000 feet, whichever is higher.

(b) Without regard to paragraph (a) of this section, if the Administrator finds that safe operations are not impaired, a person may operate the airplane at an altitude that allows the airplane, in case of engine failure, to clear all obstructions within five miles on each side of the intended track by 1,000 feet. If this procedure is used, the rate of descent for the appropriate weight and altitude is assumed to be 50 feet a minute greater than the rate in the approved performance data. Before approving such a procedure, the Administrator considers the following for the route, route segment, or area concerned:

(1) The reliability of wind and weather forecasting.

(2) The location and kinds of navigation aids.

(3) The prevailing weather conditions, particularly the frequency and amount of turbulence normally encountered.

(4) Terrain features.

(5) Air traffic problems.

(6) Any other operational factors that affect the operations.

(c) For the purposes of this section, it is assumed that—

(1) The critical engine is inoperative;

(2) The propeller of the inoperative engine is in the minimum drag position;

(3) The wing flaps and landing gear are in the most favorable position;

(4) The operating engines are operating at the maximum continuous power available;

(5) The airplane is operating in standard atmosphere; and

(6) The weight of the airplane is progressively reduced by the anticipated consumption of fuel and oil.

§ 135.393 Large nontransport category airplanes: landing limitations: destination airports.

(a) No person operating a large nontransport category airplane may take off that airplane at a weight that—

(1) Allowing for anticipated consumption of fuel and oil, is greater than the weight that would allow a full stop landing within 60 percent of the effective length of the most suitable runway at the destination airport; and

(2) Is greater than the weight allowable if the landing is to be made on the runway—

(i) With the greatest effective length in still air; and

(ii) Required by the probable wind, taking into account not more than 50 percent of the headwind component or not less than 150 percent of the tailwind component.

(b) For the purpose of this section, it is assumed that—

(1) The airplane passes directly over the intersection of the obstruction clearance plane and the runway at a height of 50 feet in a steady gliding approach at a true indicated airspeed of at least 1.3 V_{so};

(2) The landing does not require exceptional pilot skill; and

(3) The airplane is operating in standard atmosphere.

§ 135.395 Large nontransport category airplanes: landing limitations: alternate airports.

No person may select an airport as an alternate airport for a large nontransport category airplane unless that airplane (at the weight anticipated at the time of arrival), based on the assumptions in § 135.393(b), can be brought to a full stop landing within 70 percent of the effective length of the runway.

§ 135.397 Small transport category airplane performance operating limitations.

(a) No person may operate a reciprocating engine powered small transport category airplane unless that person complies with the weight limitations in § 135.365, the takeoff limitations in § 135.367 (except paragraph (a)(3)), and the landing limitations in §§ 135.375 and 135.377.

(b) No person may operate a turbine engine powered small transport category airplane unless that person complies with the takeoff limitations in § 135.379 (except paragraphs (d) and (f)) and the landing limitations in §§ 135.385 and 135.387.

[§ 135.398 Commuter Category airplane performance operating limitations.

[(a) No person may operate a commuter category airplane unless that person complies with the takeoff weight limitations in the approved Airplane Flight Manual.

[(b) No person may take off an airplane type certificated in the commuter category at a weight greater than that listed in the Airplane Flight Manual that allows a net takeoff flight path that clears all obstacles either by a height of at least 35 feet vertically, or at least 200 feet horizontally within the airport boundaries and by at least 300 feet horizontally after passing the boundaries.

[(c) No person may operate a commuter category airplane unless that person complies with the landing limitations prescribed in § § 135.385 and 135.387 of this Part. For purposes of this paragraph, § § 135.385 and 135.387 are applicable to all commuter category airplanes notwithstanding their stated applicability to turbine-engine-powered large transport category airplanes.

[(d) In determining maximum weights, minimum distances and flight paths under paragraphs (a) through (c) of this section, correction must be made for the runway gradient, and ambient temperature, and wind component at the time of takeoff.

[(e) For the purpose of this section, the assumption is that the airplane is not banked before reaching a height of 50 feet as shown by the new takeoff flight path data in the Airplane Flight Manual and thereafter the maximum bank is not more than 15 degrees.]

§ 135.399 Small nontransport category airplane performance operating limitations.

(a) No person may operate a reciprocating engine or turbopropeller-powered small airplane that is certificated under § 135.169(b)(2), (3), (4), (5), or (6) unless that person complies with the takeoff weight limitations in the approved Airplane Flight Manual or equivalent for operations under this Part, and, if the airplane is certificated under § 135.169(b)(4) or (5) with the landing weight limitations in the Approved Airplane Flight Manual or equivalent for operations under this Part.

(b) No person may operate an airplane that is certificated under § 135.169(b)(6) unless that person complies with the landing limitations prescribed in §§ 135.385 and 135.387 of this Part. For purposes of this paragraph, §§ 135.385 and 135.387 are applicable to reciprocating and turbopropeller-powered small airplanes notwithstanding their stated applicability to turbine engine powered large transport category airplanes.

Subpart J—Maintenance, Preventive Maintenance, and Alterations

§ 135.411 Applicability.

(a) This subpart prescribes rules in addition to those in other parts of this chapter for the maintenance, preventive maintenance, and alterations for each certificate holder as follows:

(1) Aircraft that are type certificated for a passenger seating configuration, excluding any pilot seat, of nine seats or less, shall be maintained under Parts 91 and 43 of this chapter and §§ 135.415, 135.417, and 135.421. An approved aircraft inspection program may be used under § 135.419.

(2) Aircraft that are type certificated for a passenger seating configuration, excluding any pilot seat, of ten seats or more, shall be maintained under a maintenance program in §§ 135.415, 135.417, and 135.423 through 135.443.

(b) A certificate holder who is not otherwise required, may elect to maintain its aircraft under paragraph (a) (2) of this section.

§ 135.413 Responsibility for airworthiness.

(a) Each certificate holder is primarily responsible for the airworthiness of its aircraft, including airframes, aircraft engines, propellers, rotors, appliances, and parts, and shall have its aircraft maintained under this chapter, and shall have defects repaired between required maintenance under Part 43 of this chapter.

(b) Each certificate holder who maintains its aircraft under § 135.411(a) (2) shall—

(1) Perform the maintenance, preventive maintenance, and alteration of its aircraft, including airframe, aircraft engines, propellers, rotors, appliances, emergency equipment and parts, under its manual and this chapter; or

(2) Make arrangements with another person for the performance of maintenance, preventive maintenance or alteration. However, the certificate holder shall ensure that any maintenance, preventive maintenance, or alteration that is performed by another person is performed under the certificate holder's manual and this chapter.

§ 135.415 Mechanical reliability reports.

(a) Each certificate holder shall report the occurrence or detection of each failure, malfunction, or defect in an aircraft concerning—

(1) Fires during flight and whether the related fire-warning system functioned properly;

(2) Fires during flight not protected by related fire-warning system;

(3) False fire-warning during flight;

(4) An exhaust system that causes damage during flight to the engine, adjacent structure, equipment, or components;

(5) An aircraft component that causes accumulation or circulation of smoke, vapor, or toxic or noxious fumes in the crew compartment or passenger cabin during flight;

(6) Engine shutdown during flight because of flameout;

(7) Engine shutdown during flight when external damage to the engine or aircraft structure occurs;

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(8) Engine shutdown during flight due to foreign object ingestion or icing;

(9) Shutdown of more than one engine during flight;

(10) A propeller feathering system or ability of the system to control overspeed during flight;

(11) A fuel or fuel-dumping system that affects fuel flow or causes hazardous leakage during flight;

(12) An unwanted landing gear extension or retraction or opening or closing of landing gear doors during flight;

(13) Brake system components that result in loss of brake actuating force when the aircraft is in motion on the ground;

(14) Aircraft structure that requires major repair;

(15) Cracks, permanent deformation, or corrosion of aircraft structures, if more than the maximum acceptable to the manufacturer or the FAA; and

(16) Aircraft components or systems that result in taking emergency actions during flight (except action to shut-down an engine).

(b) For the purpose of this section, "during flight" means the period from the moment the aircraft leaves the surface of the earth on takeoff until it touches down on landing.

(c) In addition to the reports required by paragraph (a) of this section, each certificate holder shall report any other failure, malfunction, or defect in an aircraft that occurs or is detected at any time if, in its opinion, the failure, malfunction, or defect has endangered or may endanger the safe operation of the aircraft.

(d) Each certificate holder shall send each report required by this section, in writing, covering each 24-hour period beginning at 0900 hours local time of each day and ending at 0900 hours local time on the next day to the FAA Flight Standards District Office charged with the overall inspection of the certificate holder. Each report of occurrences during a 24-hour period must be mailed or delivered to that office within the next 72 hours. However, a report that is due on Saturday or Sunday may be mailed or delivered on the following Monday and one that is due on a holiday may be mailed or delivered on the next work day. For aircraft operated in areas where mail is not collected, reports may be mailed or delivered within 72 hours after the aircraft returns to a point where the mail is collected.

(e) The certificate holder shall transmit the reports required by this section on a form and in a manner prescribed by the Administrator, and shall include as much of the following as is available:

(1) The type and identification number of the aircraft.

(2) The name of the operator.

(3) The date.

(4) The nature of the failure, malfunction, or defect.

(5) Identification of the part and system involved, including available information pertaining to type designation of the major component and time since last overhaul, if known.

(6) Apparent cause of the failure, malfunction or defect (e.g., wear, crack, design deficiency, or personnel error).

(7) Other pertinent information necessary for more complete identification, determination of seriousness, or corrective action.

(f) A certificate holder that is also the holder of a type certificate (including a supplemental type certificate), a Parts Manufacturer Approval, or a Technical Standard Order Authorization, or that is the licensee of a type certificate need not report a failure, malfunction, or defect under this section if the failure, malfunction, or defect has been reported by it under § 21.3 or § 37.17 of this chapter or under the accident reporting provisions of Part 830 of the regulations of the National Transportation Safety Board.

(g) No person may withhold a report required by this section even though all information required by this section is not available.

(h) When the certificate holder gets additional information, including information from the manufacturer or other agency, concerning a report required by this section, it shall expeditiously submit it as a supplement to the first report and reference the date and place of submission of the first report.

§ 135.417 Mechanical interruption summary report.

Each certificate holder shall mail or deliver, before the end of the 10th day of the following month, a summary report of the following occurrences in multiengine aircraft for the preceding month to the FAA Flight Standards District Office charged with the overall inspection of the certificate holder:

(a) Each interruption to a flight, unscheduled change of aircraft en route, or unscheduled stop or diversion from a route, caused by known or suspected mechanical difficulties or malfunctions that are not required to be reported under § 135.415.

(b) The number of propeller featherings in flight, listed by type of propeller and engine and aircraft on which it was installed. Propeller featherings for training, demonstration, or flight check purposes need not be reported.

§ 135.419 Approved aircraft inspection program.

(a) Whenever the Administrator finds that the aircraft inspections required or allowed under Part 91 of this chapter are not adequate to meet this Part, or upon application by a certificate holder, the Administrator may amend the certificate holder's operations specifications under § 135.17, to require or allow an approved aircraft inspection program for any make and model aircraft of which the certificate holder has the exclusive use of at least one aircraft (as defined in § 135.25(b)).

(b) A certificate holder who applies for an amendment of its operations specifications to allow an approved aircraft inspection program must submit that program with its application for approval by the Administrator.

(c) Each certificate holder who is required by its operations specifications to have an approved aircraft inspection program shall submit a program for approval by the Administrator within 30 days of the amendment of its operations specifications or within any other period that the Administrator may prescribe in the operations specifications.

(d) The aircraft inspection program submitted for approval by the Administrator must contain the following:

(1) Instructions and procedures for the conduct of aircraft inspections (which must include necessary tests and checks), setting forth in detail the parts and areas of the airframe, engines, propellers, rotors, and appliances, including emergency equipment, that must be inspected.

(2) A schedule for the performance of the aircraft inspections under paragraph (1) of this paragraph expressed in terms of the time in service, calendar time, number of system operations, or any combination of these.

(3) Instructions and procedures for recording discrepancies found during inspections and correction or deferral of discrepancies including form and disposition of records.

(e) After approval, the certificate holder shall include the approved aircraft inspection program in the manual required by § 135.21.

(f) Whenever the Administrator finds that revisions to an approved aircraft inspection program are necessary for the continued adequacy of the program, the certificate holder shall, after notification by the Administrator, make any changes in the program found by the Administrator to be necessary. The certificate holder may petition the Administrator to reconsider the notice to make any changes in a program. The petition must be filed with the representatives of the Administrator assigned to it within 30 days after the certificate holder receives the notice. Except in the case of an emergency requiring immediate action in the interest of safety, the filing of the petition stays the notice pending a decision by the Administrator.

(g) Each certificate holder who has an approved aircraft inspection program shall have each aircraft that is subject to the program inspected in accordance with the program.

(h) The registration number of each aircraft that is subject to an approved aircraft inspection program must be included in the operations specifications of the certificate holder.

§ 135.421 Additional maintenance requirements.

(a) Each certificate holder who operates an aircraft type certificated for a passenger seating configuration, excluding any pilot seat, of nine seats or less, must comply with the manufacturer's recommended maintenance programs, or a program approved by the Administrator, for each aircraft engine, propeller, rotor, and each item of emergency equipment required by this chapter.

(b) For the purpose of this section, a manufacturer's maintenance program is one which is contained in the maintenance manual or maintenance instructions set forth by the manufacturer as required by this chapter for the aircraft, aircraft engine, propeller, rotor or item of emergency equipment.

§ 135.423 Maintenance, preventive maintenance, and alteration organization.

(a) Each certificate holder that performs any of its maintenance (other than required inspections), preventive maintenance, or alterations, and each person with whom it arranges for the performance of that work, must have an organization adequate to perform the work.

(b) Each certificate holder that performs any inspections required by its manual under § 135.427(b)(2) or (3), (in this subpart referred to as "required inspections"), and each person with whom it arranges for the performance of that work, must have an organization adequate to perform that work.

(c) Each person performing required inspections in addition to other maintenance, preventive maintenance, or alterations, shall organize the performance of those functions so as to separate the required inspection functions from the other maintenance, preventive maintenance, and alteration functions. The separation shall be below the level of administrative control at which overall responsibility for the required inspection functions and other maintenance, preventive maintenance, and alteration functions is exercised.

§ 135.425 Maintenance, preventive maintenance, and alteration programs.

Each certificate holder shall have an inspection program and a program covering other maintenance, preventive maintenance, and alterations, that ensures that—

(a) Maintenance, preventive maintenance, and alterations performed by it, or by other persons, are performed under the certificate holder's manual;

(b) Competent personnel and adequate facilities and equipment are provided for the proper performance of maintenance, preventive maintenance, and alterations; and

(c) Each aircraft released to service is airworthy and has been properly maintained for operation under this Part.

§ 135.427 Manual requirements.

(a) Each certificate holder shall put in its manual the chart or description of the certificate holder's organization required by § 135.423 and a list of persons with whom it has arranged for the performance of any of its required inspections, other maintenance, preventive maintenance, or alterations, including a general description of that work.

(b) Each certificate holder shall put in its manual the programs required by § 135.425 that must be followed in performing maintenance, preventive maintenance, and alterations of that certificate holder's aircraft, including airframes, aircraft engines, propellers, rotors, appliances, emergency equipment, and parts, and must include at least the following:

(1) The method of performing routine and nonroutine maintenance (other than required inspections), preventive maintenance, and alterations.

(2) A designation of the items of maintenance and alteration that must be inspected (required inspections) including at least those that could result in a failure, malfunction, or defect endangering the safe operation of the aircraft, if not performed properly or if improper parts or materials are used.

(3) The method of performing required inspections and a designation by occupational title of personnel authorized to perform each required inspection.

(4) Procedures for the reinspection of work performed under previous required inspection findings ("buy-back procedures").

(5) Procedures, standards, and limits necessary for required inspections and acceptance or rejection of the items required to be inspected and for periodic inspection and calibration of precision tools, measuring devices, and test equipment.

(6) Procedures to ensure that all required inspections are performed.

(7) Instructions to prevent any person who performs any item of work from performing any required inspection of that work.

(8) Instructions and procedures to prevent any decision of an inspector regarding any required inspection from being countermanded by persons other than supervisory personnel of the inspection unit, or a person at the level of administrative control that has overall responsibility for the management of both the required inspection functions and the other maintenance, preventive maintenance, and alterations functions.

(9) Procedures to ensure that required inspections, other maintenance, preventive maintenance, and alterations that are not completed as a result of work interruptions are properly completed before the aircraft is released to service.

(c) Each certificate holder shall put in its manual a suitable system (which may include a coded system) that provides for the retention of the following information—

(1) A description (or reference to data acceptable to the Administrator) of the work performed;

(2) The name of the person performing the work if the work is performed by a person outside the organization of the certificate holder; and

(3) The name or other positive identification of the individual approving the work.

§ 135.429 Required inspection personnel.

(a) No person may use any person to perform required inspections unless the person performing the inspection is appropriately certificated, properly trained, qualified, and authorized to do so.

(b) No person may allow any person to perform a required inspection unless, at the time, the person performing that inspection is under the supervision and control of an inspection unit.

(c) No person may perform a required inspection if that person performed the item of work to be inspected.

[(d) In the case of rotorcraft that operate in remote areas or sites, the Administrator may approve procedures for the performance of required inspection items by a pilot when no other qualified person is available, provided—

[(1) The pilot is employed by the certificate holder;

[(2) It can be shown to the satisfaction of the Administrator that each pilot authorized to perform required inspections is properly trained and qualified;

[(3) The required inspection is a result of a mechanical interruption and is not a part of a certificate holder's continuous airworthiness maintenance program;

[(4) Each item is inspected after each flight until the item has been inspected by an appropriately certificated mechanic other than the one who originally performed the item of work; and

[(5) Each item of work that is a required inspection item that is part of the flight control system shall be flight tested and reinspected before the aircraft is approved for return to service.]

[(e)] Each certificate holder shall maintain, or shall determine that each person with whom it arranges to perform its required inspections maintains, a current listing of persons who have been trained, qualified, and authorized to conduct required inspections. The persons must be identified by name, occupational title and the inspections that they are authorized to perform. The certificate holder (or person with whom it arranges to perform its required inspections) shall give written information to each person so authorized, describing the extent of that person's responsibilities, authorities, and inspectional limitations. The list shall be made available for inspection by the Administrator upon request.

§ 135.431 Continuing analysis and surveillance.

(a) Each certificate holder shall establish and maintain a system for the continuing analysis and surveillance of the performance and effectiveness of its inspection program and the program covering other maintenance, preventive maintenance, and alterations and for the correction of any deficiency in those programs, regardless of whether those programs are carried out by the certificate holder or by another person.

(b) Whenever the Administrator finds that either or both of the programs described in paragraph (a) of this section does not contain adequate procedures and standards to meet this part, the certificate holder shall, after notification by the Administrator, make changes in those programs requested by the Administrator.

(c) A certificate holder may petition the Administrator to reconsider the notice to make a change in a program. The petition must be filed with the FAA Flight Standards District Office charged with the overall inspection of the certificate holder within 30 days after the certificate holder receives the notice. Except in the case of an emergency requiring immediate action in the interest of safety, the filing of the petition stays the notice pending a decision by the Administrator.

§ 135.433 Maintenance and preventive maintenance training program.

Each certificate holder or a person performing maintenance or preventive maintenance functions for it shall have a training program to ensure that each person (including inspection personnel) who determines the adequacy of work done is fully informed about procedures and techniques and new equipment in use and is competent to perform that person's duties.

§ 135.435 Certificate requirements.

(a) Except for maintenance, preventive maintenance, alterations, and required inspections performed by repair stations certificated under the provisions of Subpart C of Part 145 of this chapter, each person who is directly in charge of maintenance, preventive maintenance, or alterations, and each person performing required inspections must hold an appropriate airman certificate.

(b) For the purpose of this section, a person "directly in charge" is each person assigned to a position in which that person is responsible for the work of a shop or station that performs maintenance, preventive maintenance, alterations, or other functions affecting airworthiness. A person who is "directly in charge" need not physically observe and direct each worker constantly but must be available for consultation and decision on matters requiring instruction or decision from higher authority than that of the person performing the work.

§ 135.437 Authority to perform and approve maintenance, preventive maintenance, and alterations.

(a) A certificate holder may perform, or make arrangements with other persons to perform, maintenance, preventive maintenance, and alterations as provided in its maintenance manual. In addition, a certificate holder may perform these functions for another certificate holder as provided in the maintenance manual of the other certificate holder.

(b) A certificate holder may approve any airframe, aircraft engine, propeller, rotor, or appliance for return to service after maintenance, preventive maintenance, or alterations that are performed under paragraph (a) of this section. However, in the case of a major repair or alteration, the work must have been done in accordance with technical data approved by the Administrator.

§ 135.439 Maintenance recording requirements.

(a) Each certificate holder shall keep (using the system specified in the manual required in § 135.427) the following records for the periods specified in paragraph (b) of this section:

(1) All the records necessary to show that all requirements for the issuance of an airworthiness release under § 135.443 have been met.

(2) Records contain the following information:

(i) The total time in service of the airframe, engine, propeller, and rotor.

(ii) The current status of life-limited parts of each airframe, engine, propeller, rotor, and appliance.

(iii) The time since last overhaul of each item installed on the aircraft which are required to be overhauled on a specified time basis.

(iv) The identification of the current inspection status of the aircraft, including the time since the last inspections required by the inspection program under which the aircraft and its appliances are maintained.

(v) The current status of applicable airworthiness directives, including the date and methods of compliance, and, if the airworthiness directive involves recurring action, the time and date when the next action is required.

(vi) A list of current major alterations and repairs to each airframe, engine, propeller, rotor, and appliance.

(b) Each certificate holder shall retain the records required to be kept by this section for the following periods:

(1) Except for the records of the last complete overhaul of each airframe, engine, propeller, rotor, and appliance the records specified in paragraph (a)(1) of this section shall be retained until the work is repeated or superseded by other work or for one year after the work is performed.

(2) The records of the last complete overhaul of each airframe, engine, propeller, rotor, and appliance shall be retained until the work is superseded by work of equivalent scope and detail.

(3) The records specified in paragraph (a)(2) of this section shall be retained and transferred with the aircraft at the time the aircraft is sold.

(c) The certificate holder shall make all maintenance records required to be kept by this section available for inspection by the Administrator or any representative of the National Transportation Safety Board.

§ 135.441 Transfer of maintenance records.

Each certificate holder who sells a United States registered aircraft shall transfer to the purchaser, at the time of the sale, the following records of that aircraft, in plain language form or in coded form which provides for the preservation and retrieval of information in a manner acceptable to the Administrator.

(a) The records specified in § 135.439(a)(2).

(b) The records specified in § 135.439(a)(1) which are not included in the records covered by paragraph (a) of this section, except that the purchaser may allow the seller to keep physical custody of such records. However, custody of records by the seller does not relieve the purchaser of its responsibility under § 135.439(c) to make the records available for inspection by the Administrator or any representative of the National Transportation Safety Board.

§ 135.443 Airworthiness release or aircraft maintenance log entry.

(a) No certificate holder may operate an aircraft after maintenance, preventive maintenance, or alterations are performed on the aircraft unless the certificate holder prepares, or causes the person with whom the certificate holder arranges for the performance of the maintenance, preventive maintenance, or alterations, to prepare—

(1) An airworthiness release; or

(2) An appropriate entry in the aircraft maintenance log.

(b) The airworthiness release or log entry required by paragraph (a) of this section must—

(1) Be prepared in accordance with the procedure in the certificate holder's manual;

(2) Include a certificate that—

(i) The work was performed in accordance with the requirements of the certificate holder's manual;

(ii) All items required to be inspected were inspected by an authorized person who determined that the work was satisfactorily completed;

(iii) No known condition exists that would make the aircraft unairworthy;

(iv) So far as the work performed is concerned, the aircraft is in condition for safe operation; and

(3) Be signed by an authorized certificated mechanic or repairman, except that a certificated repairman may sign the release or entry only for the work for which that person is employed and for which that person is certificated.

[Notwithstanding paragraph (b)(3) of this section, after maintenance, preventive maintenance, or alternations performed by a repair station certificated under the provisions of Subpart C of Part 145, the airworthiness release or log entry required by paragraph (a) of this section may be signed by a person authorized by that repair station.]

(c) Instead of restating each of the conditions of the certification required by paragraph (b) of this section, the certificate holder may state in its manual that the signature of an authorized certificated mechanic or repairman constitutes that certification.

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Appendix A

Additional Airworthiness Standards for 10 or More Passenger Airplanes

APPLICABILITY

1. *Applicability.* This Appendix prescribes the additional airworthiness standards required by § 135.169.

2. *References.* Unless otherwise provided, references in this Appendix to specific sections of Part 23 of the Federal Aviation Regulations (FAR Part 23) are to those sections of Part 23 in effect on March 30, 1967.

FLIGHT REQUIREMENTS

3. *General.* Compliance must be shown with the applicable requirements of Subpart B of FAR Part 23, as supplemented or modified in §§ 4 through 10.

PERFORMANCE

4. *General.* (a) Unless itherwise prescribed in this Appendix, compliance with each applicable performance requirement in §§ 4 through 7 must be shown for ambient atmospheric conditions and still air.

(b) The performance must correspond to the propulsive thrust available under the particular ambient atmospheric conditions and the particular flight condition. The available propulsive thrust must correspond to engine power or thrust, not exceeding the approved power or thrust less—

(1) Installation losses; and

(2) The power or equivalent thrust absorbed by the accessories and services appropriate to the particular ambient atmospheric conditions and the particular flight condition.

(c) Unless otherwise prescribed in this Appendix, the applicant must select the takeoff, en route, and landing configurations for the airplane.

(3) The airplane configuration may vary with weight, altitude, and temperature, to the extent they are compatible with the operating procedures required by paragraph (e) of this section.

(e) Unless otherwise prescribed in this Appendix, in determining the critical engine inoperative takeoff performance, the accelerate-stop distance, takeoff distance, changes in the airplane's configuration, speed, power, and thrust must be made under procedures established by the applicant for operation in service.

(f) Procedures for the execution of balked landings must be established by the applicant and included in the Airplane Flight Manual.

(g) The procedures established under paragraphs (e) and (f) of this section must—

(1) Be able to be consistently executed in service by a crew of average skill;

(2) Use methods or devices that are safe and reliable; and

(3) Include allowance for any time delays, in the execution of the procedures, that may reasonably be expected in service.

5. *Takeoff*—(a) *General.* Takeoff speeds, the accelerate-stop distance, the takeoff distance, and the one-engine-inoperative takeoff flight path data (described in paragraphs (b), (c), (d), and (f) of this section), must be determined for—

(1) Each weight, altitude, and ambient temperature within the operational limits selected by the applicant;

(2) The selected configuration for takeoff;

(3) The center of gravity in the most unfavorable position;

(4) The operating engine within approved operating limitations; and

(5) Takeoff data based on smooth, dry, hard-surface runway.

(b) *Takeoff speeds.* (1) The decision speed V_1 is the calibrated airspeed on the ground at which, as a result of engine failure or other reasons, the pilot is assumed to have made a decision to continue or discontinue the takeoff. The speed V_1 must be selected by the applicant but may not be less than—

(i) 1.10 V_{S1};

(ii) 1.10 V_{MC};

(iii) A speed that allows acceleration to V_1 and stop under paragraph (c) of this section; or

(iv) A speed at which the airplane can be rotated for takeoff and shown to be adequate to safely continue the takeoff, using normal piloting skill, when the critical engine is suddenly made inoperative.

(2) The initial climb out speed V_2, in terms of calibrated airspeed, must be selected by the applicant so as to allow the gradient of climb required in § 6(b)(2), but it must not be less than V_1 or less than 1.2 V_{S1}.

(3) Other essential take off speeds necessary for safe operation of the airplane.

(c) *Accelerate-stop distance.* (1) The accelerate-stop distance is the sum of the distances necessary to—

(i) Accelerate the airplane from a standing start to V_1; and

(ii) Come to a full stop from the point at which V_1 is reached assuming that in the case of engine failure, failure of the critical engine is recognized by the pilot at the speed V_1.

(2) Means other than wheel brakes may be used to determine the accelerate-stop distance if that means is available with the critical engine inoperative and—

(i) Is safe and reliable;

(ii) Is used so that consistent results can be expected under normal operating conditions; and

(iii) Is such that exceptional skill is not required to control the airplane.

(d) *All engines operating takeoff distance.* The all engine operating takeoff distance is the horizontal distance required to takeoff and climb to a height of 50 feet above the takeoff surface under the procedures in FAR 23.51(a).

(e) *One-engine-inoperative takeoff.* Determine the weight for each altitude and temperature within the operational limits established for the airplane, at which the airplane has the capability, after failure of the critical engine at V_1 determined under paragraph (b) of this section, to take off and climb at not less than V_2, to a height 1,000 feet above the takeoff surface and attain the speed and configuration at which compliance is shown with the en route one-engine-inoperative gradient of climb specified in § 6(c).

(f) *One-engine-inoperative takeoff flight path data.* The one-engine-inoperative takeoff flight path data consist of takeoff flight paths extending from a standing start to a point in the takeoff at which the airplane reaches a height 1,000 feet above the takeoff surface under paragraph (e) of this section.

6. *Climb*—(a) *Landing climb: All-engines-operating.* The maximum weight must be determined with the airplane in the landing configuration, for each altitude, and ambient temperature within the operational limits established for the airplane, with the most unfavorable center of gravity, and out-of-ground effect in free air, at which the steady gradient of climb will not be less than 3.3 percent, with:

(1) The engines at the power that is available 8 seconds after initiation of movement of the power or thrust controls from the minimum flight idle to the takeoff position.

(2) A climb speed not greater than the approach speed established under § 7 and not less than the greater of 1.05 V_{MC} or 1.10 V_{S1}.

(b) *Takeoff climb: one-engine-inoperative.* The maximum weight at which the airplane meets the minimum climb performance specified in subparagraphs (1) and (2) of this paragraph must be determined for each altitude and ambient temperature within the operational limits established for the airplane, out of ground effect in free air, with the airplane in the takeoff configuration, with the most unfavorable center of gravity, the critical engine inoperative, the remaining engines at the maximum takeoff power or thrust, and the propeller of the inoperative engine windmilling with the propeller controls in the normal position except that, if an approved automatic feathering system is installed, the propellers may be in the feathered position:

(1) *Takeoff: landing gear extended.* The minimum steady gradient of climb must be measurably positive at the speed V_1.

(2) *Takeoff: landing gear retracted.* The minimum steady gradient of climb may not be less than 2 percent at speed V_2. For airplanes with fixed landing gear this requirement must be met with the landing gear extended.

(c) *En route climb: one-engine-inoperative.* The maximum weight must be determined for each altitude and ambient temperature within the operational limits established for the airplane, at which the steady gradient of climb is not less than 1.2 percent at an altitude 1,000 feet above the takeoff surface, with the airplane in the en route configuration, the critical engine inoperative, the remaining engine at the maximum continuous power or thrust, and the most unfavorable center of gravity.

7. *Landing.* (a) The landing field length described in paragraph (b) of this section must be determined for standard atmosphere at each weight and altitude within the operational limits established by the applicant.

(b) The landing field length is equal to the landing distance determined under FAR 23.75 (a) divided by a factor of 0.6 for the destination airport and 0.7 for the alternate airport. Instead of the gliding approach specified in FAR 23.75(a)(1), the landing may be preceded by a steady approach down to the 50-foot height at a gradient of descent not greater than 5.2 percent (3°) at a calibrated airspeed not less than 1.3 V_{S1}.

TRIM

8. *Trim*—(a) *Lateral and directional trim.* The airplane must maintain lateral and directional trim in level flight at a speed of V_H or V_{MO}/M_{MO}, whichever is lower, with landing gear and wing flaps retracted.

(b) *Longitudinal trim.* The airplane must maintain longitudinal trim during the following conditions, except that it need not maintain trim at a speed greater than V_{MO}/M_{MO}:

(1) In the approach conditions specified in FAR 23.161(c)(3) through (5), except that instead of the speeds specified in those paragraphs, trim must be maintained with a stick force of not more than 10 pounds down to a speed used in showing compliance with § 7 or 1.4 V_{S1} whichever is lower.

(2) In level flight at any speed from V_H or V_{MO}/M_{MO}, whichever is lower, to either V_X or 1.4 V_{S1}, with the landing gear and wing flaps retracted.

STABILITY

9. *Static longitudinal stability.* (a) In showing compliance with FAR 23.175(b) and with paragraph (b) of this section, the airspeed must return to within ±7½ percent of the trim speed.

(b) *Cruise stability.* The stick force curve must have a stable slope for a speed range of ±50 knots from the trim speed except that the speeds need not exceed V_{FC}/M_{FC} or be less than 1.4 V_{S1}. This speed range will be considered to begin at the outer extremes of the friction band and the stick force may not exceed 50 pounds with—

(1) Landing gear retracted;

(2) Wing flaps retracted;

(3) The maximum cruising power as selected by the applicant as an operating limitation for turbine engines or 75 percent of maximum continuous power for reciprocating engines except that the power need not exceed that required at V_{MO}/M_{MO};

(4) Maximum takeoff weight; and

(5) The airplane trimmed for level flight with the power specified in subparagraph (3) of this paragraph.

V_{FC}/M_{FC} may not be less than a speed midway between V_{MO}/M_{MO} and V_{DF}/M_{DF}, except that, for altitudes where Mach number is the limiting factor, M_{FC} need not exceed the Mach number at which effective speed warning occurs.

(c) *Climb stability (turbopropeller powered airplanes only).* In showing compliance with FAR 23.175(a), an applicant must, instead of the power specified in FAR 23.175(a)(4), use the maximum power or thrust selected by the applicant as an operating limitation for use during climb at the best rate of climb speed, except that the speed need not be less than 1.4 V_{S1}.

STALLS

10. *Stall warning.* If artificial stall warning is required to comply with FAR 23.207, the warning device must give clearly distinguishable indications under expected conditions of flight. The use of a visual warning device that requires the attention of the crew within the cockpit is not acceptable by itself.

CONTROL SYSTEMS

11. *Electric trim tabs.* The airplane must meet FAR 23.677 and in addition it must be shown that the airplane is safely controllable and that a pilot can perform all the maneuvers and operations necessary to effect a safe landing following any probable electric trim tab runaway which might be reasonably expected in service allowing for appropriate time delay after pilot recognition of the runaway. This demonstration must be conducted at the critical airplane weights and center of gravity positions.

INSTRUMENTS: INSTALLATION

12. *Arrangement and visibility.* Each instrument must meet FAR 23.1321 and in addition:

(a) Each flight, navigation, and powerplant instrument for use by any pilot must be plainly visible to the pilot from the pilot's station with the minimum practicable deviation from the pilot's normal position and line of vision when the pilot is looking forward along the flight path.

(b) The flight instruments required by FAR 23.1303 and by the applicable operating rules must be grouped on the instrument panel and centered as nearly as practicable about the vertical plane of each pilot's forward vision. In addition—

(1) The instrument that most effectively indicates the attitude must be in the panel in the top center position;

(2) The instrument that most effectively indicates the airspeed must be on the panel directly to the left of the instrument in the top center position;

(3) The instrument that most effectively indicates altitude must be adjacent to and directly to the right of the instrument in the top center position; and

(4) The instrument that most effectively indicates direction of flight must be adjacent to and directly below the instrument in the top center position.

13. *Airspeed indicating system.* Each airspeed indicating system must meet FAR 23.1323 and in addition:

(a) Airspeed indicating instruments must be of an approved type and must be calibrated to indicate true airspeed at sea level in the standard atmosphere with a minimum practicable instrument calibration error when the corresponding pitot and static pressures are supplied to the instruments.

(b) The airspeed indicating system must be calibrated to determine the system error, i.e., the relation between IAS and CAS, in flight and during the accelerate-takeoff ground run. The ground run calibration must be obtained between 0.8 of the minimum value of V_1 and 1.2 times the maximum value of V_1, considering the approved ranges of altitude and weight. The ground run calibration is determined assuming an engine failure at the minimum value of V_1.

(c) The airspeed error of the installation excluding the instrument calibration error, must not exceed 3 percent or 5 knots whichever is greater, throughout the speed range from V_{MO} to 1.3 V_{S1} with flaps retracted and from 1.3 V_{SO} to V_{FE} with flaps in the landing position.

(d) Information showing the relationship between IAS and CAS must be shown in the Airplane Flight Manual.

14. *Static air vent system.* The static air vent system must meet FAR 23.1325. The altimeter system calibration must be determined and shown in the Airplane Flight Manual.

OPERATING LIMITATIONS AND INFORMATION

15. *Maximum operating limit speed* V_{MO}/M_{MO}. Instead of establishing operating limitations based on V_{NE}/V_{NO}, the applicant must establish a maximum operating limit speed V_{MO}/M_{MO} as follows:

(a) The maximum operating limit speed must not exceed the design cruising speed V_C and must be sufficiently below V_D/M_D or V_{DF}/M_{DF} to make it highly improbable that the latter speeds will be inadvertently exceeded in flight.

(b) The speed V_{MO} must not exceed $0.8V_D/M_D$ or $0.8V_{DF}/M_{DF}$ unless flight demonstrations involving upsets as specified by the Administrator indicates a lower speed margin will not result in speeds exceeding V_D/M_D or V_{DF}. Atmospheric variations, horizontal gusts, system and equipment errors, and airframe production variations are taken into account.

16. *Minimum flight crew.* In addition to meeting FAR 23.1523, the applicant must establish the minimum number and type of qualified flight crew personnel sufficient for safe operation of the airplane considering—

(a) Each kind of operation for which the applicant desires approval;

(b) The workload on each crewmember considering the following:

(1) Flight path control.

(2) Collision avoidance.

(3) Navigation.

(4) Communications.

(5) Operation and monitoring of all essential aircraft systems.

(6) Command decisions; and

(c) The accessibility and ease of operation of necessary controls by the appropriate crewmember during all normal and emergency operations when at the crewmember flight station.

17. *Airspeed indicator.* The airspeed indicator must meet FAR 23.1545 except that, the airspeed notations and markings in terms of V_{NO} and V_{NH} must be replaced by the V_{MO}/M_{MO} notations. The airspeed indicator markings must be easily read and understood by the pilot. A placard adjacent to the airspeed indicator is an acceptable means of showing compliance with FAR 23.1545(c).

AIRPLANE FLIGHT MANUAL

18. *General.* The Airplane Flight Manual must be prepared under FARs 23.1583 and 23.1587, and in addition the operating limitations and performance information in §§ 19 and 20 must be included.

19. *Operating limitations.* The Airplane Flight Manual must include the following limitations—

(a) *Airspeed limitations.* (1) The maximum operating limit speed V_{MO}/M_{MO} and a statement that this speed limit may not be deliberately exceeded in any regime of flight (climb, cruise, or descent) unless a higher speed is authorized for flight test or pilot training;

(2) If an airspeed limitation is based upon compressibility effects, a statement to this effect and information as to any symptoms, the probable behavior of the airplane, and the recommended recovery procedures; and

(3) The airspeed limits, shown in terms of V_{MO}/M_{MO} instead of V_{NO} and V_{NE}.

(b) *Takeoff weight limitations.* The maximum takeoff weight for each airport elevation, ambient temperature, and available takeoff runway length within the range selected by the applicant may not exceed the weight at which—

(1) The all-engine-operating takeoff distance determined under § 5(b) or the accelerate-stop distance determined under § 5(c), whichever is greater, is equal to the available runway length;

(2) The airplane complies with the one-engine-inoperative takeoff requirements specified in § 5(e); and

(3) The airplane complies with the one-engine-inoperative takeoff and en route climb requirements specified in §§ 6(b) and (c).

(c) *Landing weight limitations.* The maximum landing weight for each airport elevation (standard temperature) and available landing runway length, within the range selected by the applicant. This weight may not exceed the weight at which the landing field length determined under § 7(b) is equal to the available runway length. In showing compliance with this operating limitation, it is acceptable to assume that the landing weight at the destination will be equal to the takeoff weight reduced by the normal consumption of fuel and oil en route.

20. *Performance information.* The Airplane Flight Manual must contain the performance information determined under the performance requirements of this Appendix. The information must include the following:

(a) Sufficient information so that the takeoff weight limits specified in § 19(b) can be determined for all temperatures and altitudes within the operation limitations selected by the applicant.

(b) The conditions under which the performance information was obtained, including the airspeed at the 50-foot height used to determine landing distances.

(c) The performance information (determined by extrapolation and computed for the range of weights between the maximum landing and takeoff weights) for—

(1) Climb in the landing configuration; and

(2) Landing distance.

(d) Procedure established under § 4 related to the limitations and information required by this section in the form of guidance material including any relevant limitations or information.

(e) An explanation of significant or unusual flight or ground handling characteristics of the airplane.

(f) Airspeeds, as indicated airspeeds, corresponding to those determined for takeoff under § 5(b).

21. *Maximum operating altitudes.* The maximum operating altitude to which operation is allowed, as limited by flight, structural, powerplant, functional, or equipment characteristics, must be specified in the Airplane Flight Manual.

22. *Stowage provision for airplane flight manual.* Provision must be made for stowing the Airplane Flight Manual in a suitable fixed container which is readily accessible to the pilot.

23. *Operating procedures.* Procedures for restarting turbine engines in flight (including the effect of altitude) must be set forth in the Airplane Flight Manual.

Airframe Requirements Flight Loads

24. *Engine Torque.* (a) Each turbopropeller engine mount and its supporting structure must be designed for the torque effects of:

(1) The conditions in FAR 23.361(a).

(2) The limit engine torque corresponding to takeoff power and propeller speed multiplied by a factor accounting for propeller control system malfunction, including quick feathering action, simultaneously with $1g$ level flight loads. In the absence of a rational analysis, a factor of 1.6 must be used.

(b) The limit torque is obtained by multiplying the mean torque by a factor of 1.25.

25. *Turbine engine gyroscopic loads.* Each turobpropeller engine mount and its supporting structure must be designed for the gyroscopic loads that result, with the engines at maximum continuous r.p.m. under either—

(a) The conditions in FARs 23.351 and 23.423; or

(b) All possible combinations of the following:

(1) A yaw velocity of 2.5 radians per second.

(2) A pitch velocity of 1.0 radians per second.

(3) A normal load factor of 2.5.

(4) Maximum continuous thrust.

26. *Unsymmetrical loads due to engine failure.* (a) Turbopropeller powered airplanes must be designed for the unsymmetrical loads resulting from the failure of the critical engine including the following conditions in combination with a single malfunction of the propeller drag limiting system, considering the probable pilot corrective action on the flight controls:

(1) At speeds between V_{MO} and V_D, the loads resulting from power failure because of fuel flow interruption are considered to be limit loads.

(2) At speeds between V_{MO} and V_C, the loads resulting from the disconnection of the engine compressor from the turbine or from loss of the turbine blades are considered to be ultimate loads.

(3) The time history of the thrust decay and drag buildup occurring as a result of the prescribed engine failures must be substantiated by test or other data applicable to the particular engine-propeller combination.

(4) The timing and magnitude of the probable pilot corrective action must be conservatively estimated, considering the characteristics of the particular engine-propeller-airplane combination.

(b) Pilot corrective action may be assumed to be initiated at the time maximum yawing velocity is reached, but not earlier than 2 seconds after the engine failure. The magnitude of the corrective action may be based on the control forces in FAR 23.397 except that lower forces may be assumed where it is shown by analysis or test that these forces can control the yaw and roll resulting from the prescribed engine failure conditions.

Ground Loads

27. *Dual wheel landing gear units.* Each dual wheel landing wear unit and its supporting structure must be shown to comply with the following:

(a) *Pivoting.* The airplane must be assumed to pivot about one side of the main gear with the brakes on that side locked. The limit vertical load factor must be 1.0 and the coefficient of friction 0.8. This condition need apply only to the main gear and its supporting structure.

(b) *Unequal tire inflation.* A 60–40 percent distribution of the loads established under FAR 23.471 through FAR 23.483 must be applied to the dual wheels.

(c) *Flat tire.* (1) Sixty percent of the loads in FAR 23.471 through FAR 23.483 must be applied to either wheel in a unit.

(2) Sixty percent of the limit drag and side loads and 100 percent of the limit vertical load established under FARs 23.493 and 23.485 must be applied to either wheel in a unit except that the vertical load need not exceed the maximum vertical load in paragraph (c)(1) of this section.

Fatigue Evaluation

28. *Fatigue evaluation of wing and associated structure.* Unless it is shown that the structure, operating stress levels, materials and expected use are comparable from a fatigue standpoint to a similar design which has had substantial satisfactory service experience, the strength, detail design, and the fabrication of those parts of the wing, wing carrythrough, and attaching structure whose failure would be catastrophic must be evaluated under either—

(a) A fatigue strength investigation in which the structure is shown by analysis, tests, or both to be able to withstand the repeated loads of variable magnitude expected in service; or

(b) A fail-safe strength investigation in which it is shown by analysis, tests, or both that catastrophic failure of the structure is not probable after fatigue, or obvious partial failure, of a principal structural element, and that the remaining structure is able to withstand a static ultimate load factor of 75 percent of the critical limit load factor at V_C. These loads must be multiplied by a factor of 1.15 unless the dynamic effects of failure under static load are otherwise considered.

DESIGN AND CONSTRUCTION

29. *Flutter.* For multiengine turbopropeller powered airplanes, a dynamic evaluation must be made and must include—

(a) The significant elastic, inertia, and aerodynamic forces associated with the rotations and displacements of the plane of the propeller; and

(b) Engine-propeller-nacelle stiffness and damping variations appropriate to the particular configuration.

LANDING GEAR

30. *Flap operated landing gear warning device.* Airplanes having retractable landing gear and wing flaps must be equipped with a warning device that functions continuously when the wing flaps are extended to a flap position that activates the warning device to give adequate warning before landing, using normal landing procedures, if the landing gear is not fully extended and locked. There may not be a manual shut off for this warning device. The flap position sensing unit may be installed at any suitable location. The system for this device may use any part of the system (including the aural warning device) provided for other landing gear warning devices.

PERSONNEL AND CARGO ACCOMMODATIONS

31. *Cargo and baggage compartments.* Cargo and baggage compartments must be designed to meet FAR 23.787 (a) and (b), and in addition means must be provided to protect passengers from injury by the contents of any cargo or baggage compartment when the ultimate forward inertia force is 9*g*.

32. *Doors and exits.* The airplane must meet FAR 23.783 and FAR 23.807 (a)(3), (b), and (c), and in addition:

(a) There must be a means to lock and safegard each external door and exit against opening in flight either inadvertently by persons, or as a result of mechancial failure. Each external door must be operable from both the inside and the outside.

(b) There must be means for direct visual inspection of the locking mechanism by crewmembers to determine whether external doors and exits, to determine whether external doors ment is outward, are fully locked. In addition, there must be a visual means to signal to crewmembers when normally used external doors are closed and fully locked.

(c) The passenger entrance door must qualify as a floor level emergency exit. Each additional required emergency exit except floor level exits must be located over the wing or must be provided with acceptable means to assist the occupants in descending to the ground. In addition to the passenger entrance door:

(1) For a total seating capacity of 15 or less, an emergency exit as defined in FAR 23.807(b) is required on each side of the cabin.

(2) For a total seating capacity of 16 through 23, three emergency exits as defined in FAR 23.807(b) are required with one on the same side as the door and two on the side opposite the door.

(d) An evacuation demonstration must be conducted utilizing the maximum number of occupants for which certification is desired. It must be conducted under simulated night conditions utilizing only the emergency exits on the most critical side of the aircraft. The participants must be representative of average airline passengers with no previous practice or rehearsal for the demonstration. Evacuation must be completed within 90 seconds.

(e) Each emergency exit must be marked with the word "Exit" by a sign which has white letters 1 inch high on a red background 2 inches high, be self-illuminated or independently internally electrically illuminated, and have a minimum luminescence (brightness) of at least 160 microlamberts. The colors may be reserved if the passenger compartment illumination is essentially the same.

(f) Access to window type emergency exits must not be obstructed by seats or seat backs.

(g) The width of the main passenger aisle at any point between seats must equal or exceed the values in the following table:

Total seating capacity	Minimum main passenger aisle width	
	Less than 25 inches from floor	*25 inches and more from floor*
10 through 23 ------	9 inches ----	15 inches.

Miscellaneous

33. *Lightning strike protection.* Parts that are electrically insulated from the basic airframe must be connected to it through lightning arrestors unless a lightning strike on the insulated part—

(a) Is improbable because of shielding by other parts; or

(b) Is not hazardous.

34. *Ice protection.* It certification with ice protection provisions is desired, compliance with the following must be shown:

(a) The recommended procedures for the use of the ice protection equipment must be set forth in the Airplane Flight Manual.

(b) An analysis must be performed to establish, on the basis of the airplane's operational needs, the adequacy of the ice protection system for the various components of the airplane. In addition, tests of the ice protection system must be conducted to demonstrate that the airplane is capable of operating safely in continuous maximum and intermittent maximum icing conditions as described in Appendix C of Part 25 of this chapter.

(c) Compliance with all or portions of this section may be accomplished by reference, where applicable because of similarity of the designs, to analysis and tests performed by the applicant for a type certificated model.

35. *Maintenance information.* The applicant must make available to the owner at the time of delivery of the airplane the information the applicant considers essential for the proper maintenance of the airplane. That information must include the following:

(a) Description of systems, including electrical hydraulic, and fuel controls.

(b) Lubrication instructions setting forth the frequency and the lubricants and fluids which are to be used in the various systems.

(c) Pressures and electrical loads applicable to the various systems.

(d) Tolerances and adjustments necessary for proper functioning.

(e) Methods of leveling, raising, and towing.

(f) Methods of balancing control surfaces.

(g) Identification of primary and secondary structures.

(h) Frequency and extent of inspections necessary to the proper operation of the airplane.

(i) Special repair methods applicable to the airplane.

(j) Special inspection techniques, such as X-ray, ultrasonic, and magnetic particle inspection.

(k) List of special tools.

Propulsion

General

36. *Vibration characteristics.* For turbopropeller powered airplanes, the engine installation must not result in vibration characteristics of the engine exceeding those established during the type certification of the engine.

37. *In flight restarting of engine.* If the engine on turbopropeller powered airplanes cannot be restarted at the maximum cruise altitude, a determination must be made of the altitude below which restarts can be consistently accomplished. Restart information must be provided in the Airplane Flight Manual.

38. *Engines.* (a) *For turopropeller powered airplanes.* The engine installation must comply with the following:

(1) *Engine isolation.* The powerplants must be arranged an isolated from each other

to all operation, in at least one configuration, so that the failure or malfunction of any engine, or of any system that can affect the engine, will not—

(i) Prevent the continued safe operation of the remaining engines; or

(ii) Require immediate action by any crewmember for continued safe operation.

(2) *Control of engine rotation.* There must be a means to individually stop and restart the rotation of any engine in flight except that engine rotation need not be stopped if continued rotation could not jeopardize the safety of the airplane. Each component of the stopping and restarting system on the engine side of the firewall, and that might be exposed to fire, must be at least fire resistant. If hydraulic propeller feathering systems are used for this purpose, the feathering lines must be at least fire resistant under the operating conditions that may be expected to exist during feathering.

(3) *Engine speed and gas temperature control devices.* The powerplant systems associated with engine control devices, systems, and instrumentation must provide reasonable assurance that those engine operating limitations that adversely affect turbine rotor structural integrity will not be exceeded in service.

(b) *For reciprocating engine powered airplanes.* To provide engine isolation, the powerplants must be arranged and isolated from each other to allow operation, in at least one configuration, so that the failure or malfunction of any engine, or of any system that can affect that engine, will not—

(1) Prevent the continued safe operation of the remaining engines; or

(2) Require immediate action by any crewmember for continued safe operation.

39. *Turbopropeller reversing systems.* (a) Turbopropeller reversing systems intended for ground operation must be designed so that no single failure or malfunction of the system will result in unwanted reverse thrust under any expected operating condition. Failure of structural elements need not be considered if the probability of this kind of failure is extremely remote.

(b) Turbopropeller reversing systems intended for in flight use must be designed so that no unsafe condition will result during normal operation of the system, or from any failure (or reasonably likely combination of failures) of the reversing system, under any anticipated condition of operation of the airplane. Failure of structural elements need not be considered if the probability of this kind of failure is extremely remote.

(c) Compliance with this section may be shown by failure analysis, testing, or both for propeller systems that allow propeller blades to move from the flight low-pitch position to a position that is substantially less than that at the normal flight low-pitch stop position. The analysis may include or be supported by the analysis made to show compliance with the type certification of the propeller and associated installation components. Credit will be given for pertinent analysis and testing completed by the engine and propeller manufacturers.

40. *Turbopropeller drag-limiting systems.* Turbopropeller drag-limiting systems must be designed so that no single failure or malfunction of any of the systems during normal or emergency operation results in propeller drag in excess of that for which the airplane was designed. Failure of structure elements of the drag-limiting systems need not be considered if the probability of this kind of failure is extremely remote.

41. *Turbine engine powerplant operating characteristics.*. For turbopropeller powered airplanes, the turbine engine powerplant operating characteristics must be investigated in flight to determine that no adverse characteristics (such as stall, surge, or flameout) are present to a hazardous degree, during normal and emergency operation within the range of operating limitations of the airplane and of the engine.

42. *Fuel flow.* (a) For turbopropeller powered airplanes—

(1) The fuel system must provide for continuous supply of fuel to the engines for normal operation without interruption due to de-

pletion of fuel in any tank other than the main tank; and

(2) The fuel flow rate for turbopropeller engine fuel pump systems must not be less than 125 percent of the fuel flow required to develop the standard sea level atmospheric conditions takeoff power selected and included as an operating limitation in the Airplane Flight Manual.

(b) For reciprocating engine powered airplanes, it is acceptable for the fuel flow rate for each pump system (main and reserve supply) to be 125 percent of the takeoff fuel consumption of the engine.

Fuel System Components

43. *Fuel pumps.* For turbopropeller powered airplanes, a reliable and independent power source must be provided for each pump used with turbine engines which do not have provisions for mechanically driving the main pumps. It must be demonstrated that the pump installations provide a reliability and durability equivalent to that in FAR 23.991(a).

44. *Fuel strainer or filter.* For turbopropeller powered airplanes, the following apply:

(a) There must be a fuel strainer or filter between the tank outlet an dthe fuel metering device of the engine. In addition, the fuel strainer or filter must be—

(1) Between the tank outlet and the engine-driven positive displacement pump inlet, if there is an engine-driven positive displacement pump;

(2) Accessible for drainage and cleaning and, for the strainer screen, easily removable; and

(3) Mounted so that its weight is not supported by the connecting lines or by the inlet or outlet connections of the strainer or filter itself.

(b) Unless there are means in the fuel system to prevent the accumulation of ice on the filter, there must be means to automatcially maintain the fuel-flow if ice-clogging of the filter occurs; and

(c) The fuel strainer or filter must be of adequate capacity (for operating limitations establisheds to ensure proper service) and of appropriate mesh to ensure proper engine operation, with the fuel contaminated to a degree (for particle size and density) that can be reasonably expected in service. The degree of fuel filtering may not be less than that established for the engine type certification.

45. *Lightning strike protection.* Protection must be provided against the ignition of flammable vapors in the fuel vent system due to lightning strikes.

Cooling

46. *Cooling test procedures for turbopropeller powered airplanes.* (a) Turbopropeller powered airplanes must be shown to comply with FAR 23.1041 during takeoff, climb, en route, and landing stages of flight that correspond to the applicable performance requirements. The cooling tests must be conducted with the airplane in the configuration, and operating under the conditions that are critical relative to cooling during each stage of flight. For the cooling tests a temperature is "stabilized" when its rate of change is less than 2° F. per minute.

(b) Temperatures must be stabilized under the conditions from which entry is made into each stage of flights being investigated unless the entry condition is not one during which component and engine fluid temperatures would stabilize, in which case, operation through the full entry condition must be conducted before entry into the stage of flight being investigated to allow temperatures to reach their natural levels at the time of entry. The takeoff cooling test must be preceded by a period during which the powerplant component and engine fluid temperatures are stabilized with the engines at ground idle.

(c) Cooling tests for each stage of flight must be continued until—

(1) The component and engine fluid temperatures stabilize;

(2) The stage of flight is completed; or

(3) An operating limitation is reached.

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INDUCTION SYSTEM

47. *Air induction.* For turbopropeller powered airplanes—

(a) There must be means to prevent hazardous quantities of fuel leakage or overflow from drains, vents, or other components of flammable fluid systems from entering the engine intake systems; and

(b) The air inlet ducts must be located or protected so as to minimize the ingestion of foreign matter during takeoff, landing, and taxiing.

48. *Induction system icing protection.* For turbopropeller powered airplanes, each turbine engine must be able to operate throughout its flight power range without adverse effect on engine operation or serious loss of power or thrust, under the icing conditions specified in Appendix C of Part 25 of this chapter. In addition, there must be means to indicate to appropriate flight crewmembers the functioning of the powerplant ice protection system.

49. *Turbine engine bleed air systems.* Turbine engine bleed air systems of turbopropeller powered airplanes must be investigated to determine—

(a) That no hazard to the airplane will result if a duct rupture occurs. This condition must consider that a failure of the duct can occur anywhere between the engine port and the airplane bleed service; and

(b) That, if the bleed air system is used for direct cabin pressurization, it is not possible for hazardous contamination of the cabin air system to occur in event of lubrication system failure.

EXHAUST SYSTEM

50. *Exhaust system drains.* Turbopropeller engine exhaust systems having low spots or pockets must incorporate drains at those locations. These drains must discharge clear of the airplane in normal and ground attitudes to prevent the accumulation of fuel after the failure of an attempted engine start.

POWERPLANT CONTROLS AND ACCESSORIES

51. *Engine controls.* If throttles or power levers for turbopropeller powered airplanes are such that any position of these controls will reduce the fuel flow to the engine(s) below that necessary for satisfactory and safe idle operation of the engine while the airplane is in flight, a means must be provided to prevent inadvertent movement of the control into this position. The means provided must incorporate a positive lock or stop at this idle position and must require a separate and distinct operation by the crew to displace the control from the normal engine operating range.

52. *Reverse thrust controls.* For turbopropeller powered airplanes, the propeller reverse thrust controls must have a means to prevent their inadvertent operation. The means must have a positive lock or stop at the idle position and must require a separate and distinct operation by the crew to displace the control from the flight regime.

53. *Engine ignition systems.* Each turbopropeller airplane ignition system must be considered an essential electrical load.

54. *Powerplant accessories.* The powerplant accessories must meet FAR 23.1163, and if the continued rotation of any accessory remotely driven by the engine is hazardous when malfunctioning occurs, there must be means to prevent rotation without interfering with the continued operation of the engine.

POWERPLANT FIRE PROTECTION

55. *Fire detector system.* For turbopropeller powered airplanes, the following apply:

(a) There must be a means that ensures prompt detection of fire in the engine compartment. An overtemperature switch in each engine cooling air exit is an acceptable method of meeting this requirement.

(b) Each fire detector must be constructed and installed to withstand the vibration, inertia, and other loads to which it may be subjected in operation.

(c) No fire detector may be affected by any oil, water, other fluids, or fumes that might be present.

(d) There must be means to allow the flight crew to check, in flight, the functioning of each fire detector electric circuit.

(e) Wiring and other components of each fire detector system in a fire zone must be at least fire resistant.

56. *Fire protection, cowling and nacelle skin.* For reciprocating engine powered airplanes, the engine cowling must be designed and constructed so that no fire originating in the engine compartment can enter either through openings or by burn through, any other region where it would create additional hazards.

57. *Flammable fluid fire protection.* If flammable fluids or vapors might be liberated by the leakage of fluid systems in areas other than engine compartments, there must be means to—

(a) Prevent the ignition of those fluids or vapors by any other equipment; or

(b) Control any fire resulting from that ignition.

EQUIPMENT

58. *Powerplant instruments.* (a) The following are required for turbopropeller airplanes:

(1) The instruments required by FAR 23.1305(a)(1) through (4), (b)(2) and (4).

(2) A gas temperature indicator for each engine.

(3) Free air temperature indicator.

(4) A fuel flowmeter indicator for each engine.

(5) Oil pressure warning means for each engine.

(6) A torque indicator or adequate means for indicating power output for each engine.

(7) Fire warning indicator for each engine.

(8) A means to indicate when the propeller blade angle is below the low-pitch position corresponding to idle operation in flight.

(9) A means to indicate the functioning of the ice protection system for each engine.

(b) For turbopropeller powered airplanes, the turbopropeller blade position indicator must begin indicating when the blade has moved below the flight low-pitch position.

(c) The following instruments are required for reciprocating engine powered airplanes:

(1) The instruments required by FAR 23.1305.

(2) A cylinder head temperature indicator for each engine.

(3) A manifold pressure indicator for each engine.

SYSTEMS AND EQUIPMENTS

GENERAL

59. *Function and installation.* The systems and equipment of the airplane must meet FAR 23.1301, and the following:

(a) Each item of additional installed equipment must—

(1) Be of a kind and design appropriate to its intended function;

(2) Be labeled as to its identification, function, or operating limitations, or any applicable combination of these factors, unless misuse or inadvertent actuation cannot create a hazard;

(3) Be installed according to limitations specified for that equipment; and

(4) Function properly when installed.

(b) Systems and installations must be designed to safeguard against hazards to the aircraft in the event of their malfunction or failure.

(c) Where an installation, the functioning of which is necessary in showing compliance with the applicable requirements, requires a power supply, that installation must be considered an essential load on the power supply, and the power sources and the distribution system must be capable of supplying the following power loads in probable operation combinations and for probable durations:

(1) All essential loads after failure of any prime mover, power converter, or energy storage device.

(2) All essential loads after failure of any one engine on two-engine airplanes.

(3) In determining the probable operating combinations and durations of essential loads for the power failure conditions described in subparagraphs (1) and (2) of this paragraph, it is permissible to assume that the power loads are reduced in accordance with a monitoring procedure which is consistent with safety in the types of operations authorized.

60. *Ventilation.* The ventilation system of the airplane must meet FAR 23.831, and in addition, for pressurized aircraft, the ventilating air in flight crew and passenger compartments must be free of harmful or hazardous concentrations of gases and vapors in normal operation and in the event of reasonably probable failures or malfunctioning of the ventilating, heating, pressurization, or other systems, and equipment. If accumulation of hazardous quantities of smoke in the cockpit area is reasonably probable, smoke evacuation must be readily accomplished.

ELECTRICAL SYSTEMS AND EQUIPMENT

61. *General.* The electrical systems and equipment of the airplane must meet FAR 23.1351, and the following:

(a) *Electrical system capacity.* The required generating capacity, and number and kinds of power sources must—

(1) Be determined by an electrical load analysis; and

(2) Meet FAR 23.1301.

(b) *Generating system.* The generating system includes electrical power sources, main power busses, transmission cables, and associated control, regulation and protective devices. It must be designed so that—

(1) The system voltage and frequency (as applicable) at the terminals of all essential load equipment can be maintained within the limits for which the equipment is designed, during any probable operating conditions;

(2) System transients due to switching, fault clearing, or other causes do not make essential loads inoperative, and do not cause a smoke or fire hazard;

(3) There are means, accessible in flight to appropriate crewmembers, for the individual and collective disconnection of the electrical power sources from the system; and

(4) There are means to indicate to appropriate crewmembers the generating system quantities essential for the safe operation of the system, including the voltage and current supplied by each generator.

62. *Electrical equipment and installation.* Electrical equipment, controls, and wiring must be installed so that operation of any one unit or system of units will not adversely affect the simultaneous operation of any other electrical unit or system essential to the safe operation.

63. *Distribution system.* (a) For the purpose of complying with this section, the distribution system includes the distribution busses, their associated feeders, and each control and protective device.

(b) Each system must be designed so that essential load circuits can be supplied in the event of reasonably probable faults or open circuits, including faults in heavy current carrying cables.

(c) If two independent sources of electrical power for particular equipment or systems are required under this Appendix, their electrical energy supply must be ensured by means such as duplicate electrical equipment, throwover switching, or multichannel or loop circuits separately routed.

64. *Circuit protective devices.* The circuit protective devices for the electrical circuits of the airplane must meet FAR 23.1357, and in addition circuits for loads which are essential to safe operation must have individual and exclusive circuit protection.

APPENDIX B—AIRPLANE FLIGHT RECORDER SPECIFICATIONS

Parameters	Range	Installed system [1] minimum accuracy (to recovered data)	Sampling interval (per second)	Resolution [4] read out
Relative time (from recorded on prior to takeoff).	8 hr minimum	±0.125% per hour	1	1 sec.
Indicated airspeed	V_{so} to V_D (KIAS)	±5% or ±10 kts., whichever is greater. Resolution 2 kts. below 175 KIAS.	1	1% [3].
Altitude	−1,000 ft. to max cert. alt. of A/C	±100 to ±700 ft. (see Table 1, TSO C51-a).	1	25 to 150
Magnetic heading	360°	±5°	1	1°
Vertical acceleration	−3g to +6g	±0.2g in addition to ±0.3g maximum datum.	4 (or 1 per second where peaks, ref. to 1g are recorded).	0.03g.
Longitudinal acceleration	±1.0g	±1.5% max. range excluding datum error of ±5%.	2	0.01g.
Pitch attitude	100% of usable	±2°	1	0.8°
Roll attitude	±60° or 100% of usable range, whichever is greater.	±2°	1	0.8°
Stabilizer trim position	Full range	±3% unless higher uniquely required	1	1% [3].
Or				
Pitch control position	Full range	±3% unless higher uniquely required	1	1% [3].
Engine Power, Each Engine				
Fan or N_1 speed or EPR or cockpit indications used for aircraft certification.	Maximum range	±5%	1	1% [3].
Or				
Prop. speed and torque (sample once/sec as close together as practicable).			1 (prop speed), 1 (torque).	
Altitude rate [2] (need depends on altitude resolution).	±8,000 fpm	±10%. Resolution 250 fpm below 12,000 ft. indicated.	1	250 fpm Below 12,000.
Angle of attack [2] (need depends on altitude resolution).	−20° to 40° or of usable range	±2°	1	0.8% [3]
Radio transmitter keying (discrete)	On/off		1	
TE flaps (discrete or analog)	Each discrete position (U, D, T/O, AAP)		1	
	Or			
	Analog 0-100% range	±3°	1	1% [3]
LE flaps (discrete or analog)	Each discrete position (U, D, T/O, AAP)		1	
	Or			
	Analog 0-100% range	±3°	1	1% [3]
Thrust reverser, each engine (Discrete)	Stowed or full reverse		1	
Spoiler/speedbrake (discrete)	Stowed or out		1	
Autopilot engaged (discrete)	Engaged or disengaged		1	

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[1] When data sources are aircraft instruments (except altimeters) of acceptable quality to fly the aircraft the recording system excluding these sensors (but including all other characteristics of the recording system) shall contribute no more than half of the values in this column.

[2] If data from the altitude encoding altimeter (100 ft. resolution) is used, then either one of these parameters should also be recorded. If however, altitude is recorded at a minimum resolution of 25 feet, then these two parameters can be omitted.

[3] Per cent of full range.

[4] This column applies to aircraft manufacturing after October 11, 1991.

APPENDIX C—HELICOPTER FLIGHT RECORDER SPECIFICATIONS

Parameters	Range	Installed system [1] minimum accuracy (to recovered data)	Sampling interval (per second)	Resolution [3] read out
Relative time (from recorded on prior to takeoff).	8 hr minimum	±0.125% per hour	1	1 sec.
Indicated airspeed	$V_m$in to V_D (KIAS) (minimum airspeed signal attainable with installed pilot-static system).	±5% or ±10 kts., whichever is greater	1	1 kt.
Altitude	−1,000 ft. to 20,000 ft. pressure altitude	±100 to ±700 ft. (see Table 1, TSO C51-a).	1	25 to 150 ft.
Magnetic heading	360°	±5°	1	1°
Vertical acceleration	−3g to +6g	±0.2g in addition to ±0.3g maximum datum.	4 (or 1 per second where peaks, ref. to 1g are recorded).	0.05g.
Longitudinal acceleration	±1.0g	±1.5% max. range excluding datum error of ±5%.	2	0.03g.
Pitch attitude	100% of usable range	±2°	1	0.8°.
Roll attitude	±60° or 100% of usable range, whichever is greater.	±2°	1	0.8°.
Altitude rate	±8,000 fpm	±10% Resolution 250 fpm below 12,000 ft. indicated.	1	250 fpm below 12,000.
Engine Power, Each Engine				
Main rotor speed	Maximum range	±5%	1	1% [2]
Free or power turbine	Maximum range	±5%	1	1% [2]
Engine torque	Maximum range	±5%	1	1% [2]
Flight Control—Hydraulic Pressure				
Primary (discrete)	High/low		1	
Secondary—if applicable (discrete)	High/low		1	
Radio transmitter keying (discrete)	On/off		1	
Autopilot engaged (discrete)	Engaged or disengaged		1	
SAS status—engaged (discrete)	Engaged/disengaged		1	
SAS fault status (discrete)	Fault/OK		1	
Flight Controls				
Collective	Full range	±3%	2	1% [2]
Pedal position	Full range	±3%	2	1% [2]
Lat. cyclic	Full range	±3%	2	1% [2]
Long. cyclic	Full range	±3%	2	1% [2]
Controllable stabilator position	Full range	±3%	2	1% [2]

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[1] When data sources are aircraft instruments (except altimeters) of acceptable quality to fly the aircraft the recording system excluding these sensors (but including all other characteristics of the recording system) shall contribute no more than half of the values in this column.

[2] Per cent of full range.

[3] This column applies to aircraft manufactured after October 11, 1991.

APPENDIX D—AIRPLANE FLIGHT RECORDER SPECIFICATION

Parameters	Range	Accuracy sensor input to DFDR readout	Sampling interval (per second)	resolution [4] read out
Time (GMT or Frame Counter) (range 0 to 4095, sampled 1 per frame).	24 Hrs	±0.125% Per Hour	0.25 (1 per 4 seconds).	1 sec.
Altitude	−1,000 ft to max certificated altitude of aircraft.	±100 to ±700 ft (See Table 1, TSO-C51a).	1	5' to 35' [1].
Airspeed	50 KIAS to V_{so}, and V_{so} to 1.2 V_D	±5%, ±3%	1	1kt.
Heading	360°	±2°	1	0.5°.
Normal Acceleration (Vertical)	−3g to +6g	±1% of max range excluding datum error of ±5%.	8	0.01g
Pitch Attitude	±75°	±2°	1	0.5°.
Roll Attitude	±180°	±2°	1	0.5°.
Radio Transmitter Keying	On-Off (Discrete)		1	
Thrust/Power on Each Engine	Full range forward	±2%	1 (per engine)	0.2% [2].
Trailing Edge Flap or Cockpit Control Selection.	Full range or each discrete position	±3° or as pilot's indicator	0.5	0.5% [2].
Leading Edge Flap on or Cockpit Control Selection.	Full range or each discrete position	±3° or as pilot's indicator	0.5	0.5% [2].
Thrust Reverser Position	Stowed, in transit, and reverse (discrete).		1 (per 4 seconds per engine).	
Ground Spoiler Position/Speed Brake Selection.	Full range or each discrete position	±2% unless higher accuracy uniquely required.	1	0.22 [2].
Marker Beacon Passage	Discrete		1	
Autopilot Engagement	Discrete		1	
Longitudinal Acceleration	±1g	±1.5% max range excluding datum error of ±5%.	4	0.01g.
Pilot Input And/or Surface Position-Primary Controls (Pitch, Roll, Yaw) [3].	Full range	±2° unless higher accuracy uniquely required.	1	0.2% [2].
Lateral Acceleration	±1g	±1.5% max range excluding datum error of ±5%.	4	0.01g.
Pitch Trim Position	Full range	±3% unless higher accuracy uniquely required.	1	0.3% [2].
Glideslope Deviation	±400 Microamps	±3%	1	0.3% [2].
Localizer Deviation	±400 Microamps	±3%	1	0.3% [2].
AFCS Mode And Engagement Status	Discrete		1	
Radio Altitude	−20 ft to 2,500 ft	±2 Ft or ±3% whichever is greater below 500 ft and ±5% above 500 ft.	1	1 ft + 5% [2] above 500'.
Master Warning	Discrete		1	
Main Gear Squat Switch Status	Discrete		1	
Angle of Attack (if recorded directly)	As installed	As installed	2	0.3% [2].
Outside Air Temperature or Total Air Temperature.	−50°C to +90°c	±2°c	0.5	0.3°c
Hydraulics, Each System Low Pressure	Discrete		0.5	or 0.5% [2].
Groundspeed	As installed	Most accurate systems installed (IMS equipped aircraft only).	1	0.2% [2].

If additional recording capacity is available, recording of the following parameters is recommended. The parameters are listed in order of significance:

APPENDIX D—AIRPLANE FLIGHT RECORDER SPECIFICATION—Continued

Parameters	Range	Accuracy sensor input to DFDR readout	Sampling interval (per second)	resolution [4] read out
Drift Angle	When available. As installed	As installed	4	
Wind Speed and Direction	When available. As installed	As installed	4	
Latitude and Longitude	When available. As installed	As installed	4	
Brake pressure/Brake pedal position	As installed	As installed	1	
Additional engine parameters:				
EPR	As installed	As installed	1 (per engine)	
N1	As installed	As installed	1 (per engine)	
N2	As installed	As installed	1 (per engine)	
EGT	As installed	As installed	1 (per engine)	
Throttle Lever Position	As installed	As installed	1 (per engine)	
Fuel Flow	As installed	As installed	1 (per engine)	
TCAS:				
TA	As installed	As installed	1	
RA	As installed	As installed	1	
Sensitivity level (as selected by crew).	As installed	As installed	2	
GPWS (ground proximity warning system)	Discrete		1	
Landing gear or gear selector position	Discrete		0.25 (1 per 4 seconds).	
DME 1 and 2 Distance	0–200 NM;	As installed	0.25	1mi.
Nav 1 and 2 Frequency Selection	Full range	As installed	0.25	

[1] When altitude rate is recorded. Altitude rate must have sufficient resolution and sampling to permit the derivation of altitude to 5 feet.

[2] Per cent of full range.

[3] For airplanes that can demonstrate the capability of deriving either the control input on control movement (one from the other) for all modes of operation and flight regimes, the "or" applies. For airplanes with non-mechanical control systems (fly-by-wire) the "and" applies. In airplanes with split surfaces, suitable combination of inputs is acceptable in lieu of recording each surface separately

[4] This column applies to aircraft manufactured after October 11, 1991.

APPENDIX E—HELICOPTER FLIGHT RECORDER SPECIFICATIONS

Parameters	Range	Accuracy sensor input to DFDR readout	Sampling interval (per second)	Resolution [2] read out
Time (GMT)	24 Hrs	±0.125% Per Hour	0.25 (1 per 4 seconds).	1 sec.
Altitude	−1,000 ft to max certificated altitude of aircraft.	±100 to ±700 ft (See Table 1, TSO-C51a).	1	5' to 30'
Airspeed	As the installed measuring system	±3%	1	1 kt.
Heading	360°	±2°	1	0.5°
Normal Acceleration (Vertical)	−3g to +6g	±1% of max range excluding datum error of ±5%.	8	0.01g
Pitch Attitude	±75°	±2°	2	0.5°
Roll Attitude	±180°	±2°	2	0.5°
Radio Transmitter Keying	On-Off (Discrete)		1	0.25 sec.
Power in Each Engine: Free Power Turbine Speed *and* Engine Torque.	0–130% (power Turbine Speed) Full range (Torque).	±2%	1 speed 1 torque (per engine).	0.2% [1] to 0.4% [1]
Main Rotor Speed	0–130%	±2%	2	0.3% [1]
Altitude Rate	±6,000 ft/min	As installed	2	0.2% [1]
Pilot Input—Primary Controls (Collective, Longitudinal Cyclic, Lateral Cyclic, Pedal).	Full range	±3%	2	0.5% [1]
Flight Control Hydraulic Pressure Low	Discrete, each circuit		1	
Flight Control Hydraulic Pressure Selector Switch Position, 1st and 2nd stage.	Discrete		1	
AFCS Mode and Engagement Status	Discrete (5 bits necessary)		1	
Stability Augmentation System Engage	Discrete		1	
SAS Fault Status	Discrete		0.25	
Main Gearbox Temperature Low	As installed	As installed	0.25	0.5% [1]
Main Gearbox Temperature High	As installed	As installed	0.5	0.5% [1]
Controllable Stabilator Position	Full Range	±3%	2	0.4% [1]
Longitudinal Acceleration	±1g	±1.5% max range excluding datum error of ±5%.	4	0.01g.
Lateral Acceleration	±1g	±1.5% max range excluding datum of ±5%.	4	0.01g.
Master Warning	Discrete		1	
Nav 1 and 2 Frequency Selection	Full range	As installed	0.25	
Outside Air Temperature	−50°C to +90°C	±2°c	0.5	0.3°c.

[1] Per cent of full range.

[2] This column applies to aircraft manufactured after October 11, 1991.

Part 135—Reference Table

New Section No.	*Old Section No.*
Subpart A—General	
135.1	135.1
135.2	135.2
135.3	135.3
	135.5 [Deleted]
135.5	135.9
135.7	New
135.9	135.11
135.10	New
135.11	135.13
135.13	135.15
135.15	135.17
135.17	135.19
135.19	135.7
135.21	135.27
135.23	New
135.25	135.31
135.27	135.41
135.29	135.47
135.31	135.45
135.33	135.69
135.35	135.51
135.37	New
135.39	New
135.41	135.12
135.43	New
Subpart B—Flight Operations	
135.61	135.61
135.63	135.43
135.65	135.119
135.67	New
135.69	New
135.71	135.67
135.73	135.49
135.75	New
135.77	New
135.79	135.29
135.81	135.39
135.83	135.71
135.85	135.63
135.87	135.117
135.89	135.83
135.91	135.114
135.93	135.79
135.95	135.33
135.97	135.37
135.99	135.52
135.101	135.73
135.103	135.75
135.105	135.77
135.107	135.54
135.109	135.35
135.111	135.72
135.113	135.53
135.115	New
135.117	135.81
135.119	135.64
135.121	135.115
	135.89 [Deleted]
135.123	New
Subpart C—Aircraft and Equipment	
135.141	135.141
135.143	135.143
135.145	135.32
135.147	135.149
135.149	135.151
135.151	New
135.153	New
135.155	135.161
135.157	135.165
135.159	135.153
135.161	135.157
135.163	135.155
135.165	135.159
135.167	135.163
135.169	135.144
135.171	New
135.173	New
135.175	New
135.177	New
135.179	New
135.181	135.145
135.183	135.147
135.185	135.167
Subpart D—VFR/IFR Operating Limitations and Weather Requirements	
135.201	New
135.203	135.91
135.205	135.93
135.207	135.95
135.209	135.97
135.211	135.99
135.213	135.65
135.215	135.101
135.217	135.103
135.219	135.105
135.221	135.109
135.223	135.107
135.225	135.111
135.227	135.85
135.229	135.87
Subpart E—Flight Crewmember Requirements	
135.241	New
135.243	135.121/123
135.245	135.127
135.247	New

Reference Table—*Continued*

Subpart F—Flight Crewmember Flight and Duty Time Limitations

New Section No.	*Old Section No.*
135.261	135.136

Subpart G—Crewmember Testing Requirements

New Section No.	*Old Section No.*
135.291	New
135.293	135.138
135.295	135.139
135.297	135.131
135.299	135.122
135.301	135.133
135.303	135.135

Subpart H—Training

New Section No.	*Old Section No.*
135.321	New
135.232	New
135.325	New
135.327	New
135.329	New
135.331	New
135.333	135.140
135.335	New
135.337	New
135.339	New
135.341	135.55
135.343	135.137
135.345	New
135.347	New
135.349	New
135.351	New

Subpart I—Airplane Performance Operating Limitations

New Section No.	*Old Section No.*
135.361	New
135.363	New
135.365	New
135.367	New
135.369	New
135.371	New
135.373	New
135.375	New
135.377	New
135.379	New
135.381	New
135.383	New
135.385	New
135.387	New
135.389	New
135.391	New
135.393	New
135.395	New
135.397	135.148
135.399	135.148

Subpart J—Maintenance, Preventive Maintenance, and Alterations

New Section No.	*Old Section No.*
135.411	New
135.413	New
135.415	135.57
135.417	135.59
135.419	135.60
135.421	New
135.423	New
135.425	New
135.427	New
135.429	New
135.431	New
135.433	New
135.435	New
135.437	New
135.439	New
135.441	New
135.443	New

Special Federal Aviation Regulation 36

Operations Review Program Amendment No. 2A; Development of Major Repair Data

Adopted: January 17, 1978 **Effective: January 23, 1978**

(Published in 43 FR 3084, January 23, 1978)

SUMMARY: This amendment, being issued as a part of the FAA's Operations Review Program, adopts a new Special Federal Aviation Regulation (SFAR) that provides for the use of data for accomplishing major repairs that have been developed by repair stations, air carriers, air taxis, and commercial operators of large aircraft but which have not been specifically approved by the FAA. The SFAR will relieve affected certificate holders of the burden attendant to obtaining FAA-approval of major repair data on a case-by-case basis if certain requirements necessary in the interest of safety are met. The SFAR is also needed to develop information upon which to base a permanent rule change.

FOR FURTHER INFORMATION CONTACT:

Donald A. Schroeder, Safety Regulations Division, Flight Standards Service, Federal Aviation Administration, 800 Independence Avenue, SW., Washington, D.C. 20591; telephone (202) 755-8716.

SUPPLEMENTARY INFORMATION:

BACKGROUND

The aviation industry in the United States and abroad has grown substantially during the last ten years. Paralleling its rapid growth and numerous technological advances are significant changes in the operating environment in which airmen, air agencies, and aircraft operators function.

To enable the FAA to become more responsive to the needs of the general public and the aviation community in fulfilling the agency's aviation safety responsibilities, the FAA issued Notice No. 75-9 (40 FR 8585; February 28, 1975), inviting all interested persons to submit proposals for consideration during the Operations Review Program.

In response to that invitation, the FAA received more than 5,000 individual comments contained in 123 submissions. Based on those comments and on the Compilation of Proposals, the FAA prepared a number of working documents for the Operations Review Conference held in Arlington, Virginia, on December 1-5, 1975. The FAA distributed those documents to each person who participated in the Operations Review Program and to all other interested persons who requested them.

The Operations Review Conference was attended by more than 600 persons. Various committees discussed all the scheduled agenda items during the conference. Summaries were given by the FAA Committee Chairman at the close of the discussions on each agenda item. Persons present were given the opportunity to correct those oral summaries. Those summaries were edited and combined with an attendee list for the conference and with transcripts of certain plenary session speeches and were distributed to all attendees and to all persons requesting them in accordance with a Notice of Availability (Notice No. 75-9A; 41 FR 9413; March 4, 1976).

This amendment deals with Proposal No. 882, concerning § 145.51, that was submitted by the Air Transport Association for the Operations Review Program and is being issued as a part of that program.

DISCUSSION OF AMENDMENT

Under § 145.51 of the Federal Aviation Regulations (FAR), repair stations are allowed to approve aircraft, airframes, aircraft engines, propellers, or appliances for return to service after maintenance, preventive maintenance, or alterations. However, in the case of major repairs or major alterations, the work must have been done in accordance with FAA-approved technical data. Similar requirements exist in § 127.140(b), which is applicable to air carriers utilizing helicopters, and in § 121.379(b) which is applicable to air carriers and commercial operators of large aircraft. In addition, under § 135.2, air taxi operators using large aircraft are subject to the requirements of § 121.379(b).

While FAA-approved major alteration data may be developed under the Designated Alteration Station (DAS) provisions of Subpart M of FAR Part 21 similar provisions do not exist under which FAA-approved major repair data can be developed by those certificate holders subject to the requirements of §§ 121.379, 127.140, and 145.51. Because of this, affected certificate holders have, in the past, been required to submit major repair data and supporting information to FAA Regional Offices on a case-by-case basis for approval. Due to the large number of major repairs being performed and the financial need to have damaged aircraft repaired and returned to service as quickly as possible, the requirement for applying for case-by-case approvals has proven to be especially burdensome to affected certificate holders. In this connection, the FAA has recently been receiving an increasing number of petitions for exemption from the provisions of §§ 121.379 and 145.51. Several exemptions have been issued, subject to a number of conditions and limitations, allowing air carriers and repair stations to utilize major repair data they have developed which have not been specifically FAA-approved. Based on the experience gained under these exemptions and in view of the increasing number of exemption requests, the FAA believes it appropriate to adopt an SFAR to provide similar relief to all affected certificate holders and to enable the FAA to obtain additional information that is needed to determine the course of action to be taken with respect to §§ 121.379(b), 127.140(b), and 145.51.

In general, the SFAR being adopted is based on the DAS provisions of FAR Part 21 and the conditions and limitations contained in the related exemptions which have been granted. The SFAR requires those desiring relief to have available qualified engineering personnel. The preparation of an FAA-approved procedure manual for the development of major repair data is also required. In addition, records relating to the major repair data developed and the products incorporating the major repairs are required to be kept. The FAA believes these requirements are necessary to ensure that an adequate level of safety is maintained.

As indicated, affected certificate holders have been subjected to a severe burden under the provisions of §§ 121.379(b), 127.140(b), and 145.51, and the FAA believes that under the currently existing circumstances immediate relief is necessary. However, unless major repair data are developed under a system with adequate safeguards, using the data for a repair could result in a serious hazard to safety with respect to any aircraft incorporating the repair. The SFAR being adopted will provide an alternate means of compliance that will assure an equivalent level of safety to the existing requirements. Because of this and since no additional burden will be placed on any person, it is found that notice and public procedure hereon are impracticable and unnecessary and that good cause exists for making the amendment effective in less than 30 days. Nevertheless, since the SFAR is being adopted without prior notice and public procedure and is intended as interim rule-making action to enable the FAA to obtain information upon which to base a permanent rule change, interested persons are invited to submit comments on the new SFAR. Comments should be mailed to the Rules Docket, AGC-24, Federal Aviation Administration, Washington, D.C. 20591 and should reference the SFAR number. The FAA will consider all comments received in connection with any subsequent rule-making action to be taken with respect to the SFAR, and, if found to be justified, the FAA will initiate rule-making action with respect to the SFAR prior to its specified termination date.

DRAFTING INFORMATION

The principal authors of this document are Mr. Eli Newberger, Flight Standards Service, and Mr. Samuel Podberesky, Office of the Chief Counsel.

THE AMENDMENT

Accordingly, Special Federal Aviation Regulation No. 36 is adopted effective January 23, 1978.

NOTE: The reporting and recordkeeping requirements contained herein have been approved by the Office of Management and Budget in accordance with the Federal Reports Act of 1942.

[Secs. 313(a), 601, 604, and 607, Federal Aviation Act of 1958, as amended (49 U.S.C. 1354(a), 1421, 1424, and 1427); Sec. 6(c) of the Department of Transportation Act (49 U.S.C. 1655(c))]

The FAA has determined that this document does not contain a major proposal requiring preparation of an Economic Impact Statement under Executive Order 11821, as amended by Executive Order 11949, and OMB Circular A-107.

Special Federal Aviation Regulation 36-1

Operations Review Program Amendment No. 2B; Development of Major Repair Data

Adopted: January 18, 1980 **Effective: January 23, 1980**

(Published in 45 FR 5677, January 24, 1980)

SUMMARY: This amendment extends the effectivity of a current Special Federal Aviation Regulation (SFAR) which provides for the use of data for accomplishing major repairs that have been developed by repair stations, air carriers, air taxis, and commercial operators of large aircraft but which have not been specifically approved by the FAA.

FOR FURTHER INFORMATION CONTACT: Eli S. Newberger, Regulatory Projects Branch (AVS-24), Safety Regulations Staff, Associate Administrator for Aviation Standards, Federal Aviation Administration, 800 Independence Avenue, S.W., Washington, D.C. 20591, Telephone: (202) 755-8716.

SUPPLEMENTARY INFORMATION

SFAR 36, which became effective January 23, 1978, was issued to relieve qualifying certificated air carriers, operators, and repair stations of the burden of obtaining FAA approval of data developed by them for major repairs on a case-by-case basis. The certificate holders eligible for authorization under the SFAR are those employing adequately trained personnel and complying with specified procedural requirements.

SFAR 36 was adopted as an interim rulemaking action to obtain information upon which to base a permanent rule change. The termination date for SFAR 36 is January 23, 1980, and authorizations issued to date under SFAR 36 are effective for a period of 2 years.

At the time the termination date of SFAR 36 was established, it was anticipated that sufficient experience would be accumulated in 2 years and the termination date for SFAR 36 and each authorization issued under this SFAR was so established. However, most of the affected certificate holders did not utilize the provisions of this SFAR until recently and the FAA, therefore, does not currently have sufficient information upon which to base a permanent rule change. The reasons which justified the adoption of SFAR 36 still exist, and in order to gain the necessary experience it is in the public interest to extend the termination date of SFAR 36 from January 23, 1980, to January 23, 1982. So that previously authorized certificate holders will not be subjected to the unnecessary burden of requalifying upon expiration of the initial 2-year period, the amendment provides that each authorization issued under this SFAR has an effective period from the date of issuance until January 23, 1982. This rule extension should provide ample time for an effective evaluation of the need for, and provisions to be incorporated into, a permanent rule change.

Since this amendment continues in effect the provisions of a currently effective SFAR and imposes no additional burden on any person, I find that notice and public procedure hereon are unnecessary and it may be made effective in less than 30 days.

In consideration of the foregoing, effective January 23, 1980, Special Federal Aviation No. 36 is amended by changing the termination date from "January 23 1980" to "January 23, 1982", and by revising paragraph 5.

(Secs 313(a), 601, 604 and 607, Federal Aviation Act of 1958 as amended (49 U.S.C. 1354(a), 1421, 1424, and 1427); Sec. 6(c) of the Department of Transportation Act (49 U.S.C. 1655(c)).)

NOTE.—The FAA has determined that this document involves a regulation which is not significant under Executive Order 12044, as implemented by DOT Regulatory Policies and Procedures (44 FR 11034; February 26, 1979).

Special Federal Aviation Regulation 36-2
Development of Major Repair Data

Adopted: November 3, 1981 **Effective: January 23, 1982**

(Published in 46 FR 58651, December 3, 1981)

SUMMARY: This amendment extends the effectivity of Special Federal Aviation Regulation (SFAR) No. 36 which provides that repair stations, air carriers, air taxis, and commercial operators of large aircraft may accomplish major repairs using self-developed repair data which have not been specifically approved by the FAA.

FOR FURTHER INFORMATION CONTACT: Joseph A. Sirkis, Regulatory Projects Branch (AVS-24), Safety Regulations Staff, Associate Administrator for Aviation Standards, Federal Aviation Administration, 800 Independence Avenue, SW., Washington, D.C. 20591, Telephone: (202) 755-8716.

SUPPLEMENTARY INFORMATION: SFAR 36, which became effective January 23, 1978, was issued to relieve qualifying certificated air carriers, operators, and repair stations of the burden of obtaining FAA approval of data developed by them for major repairs on a case-by-case basis. The certificate holders eligible for authorization under the SFAR are those employing adequately trained personnel and complying with specified procedural requirements.

SFAR 36 was adopted as an interim rulemaking action to obtain information upon which to base a permanent rule change. However, most of the affected certificate holders did not utilize the provisions of SFAR 36 until it was well into its second year and near its expiration date of January 23, 1980. Since the FAA did not have sufficient data upon which to base a permanent rule change, the termination date for SFAR 36 was extended an additional 2 years. The termination date for SFAR 36 is January 23, 1982, and authorizations issued to date under SFAR 36 are effective for a period of 2 years.

The FAA will initiate rulemaking to make the authorization issued under SFAR 36 a permanent part of the Federal Aviation Regulations. The reasons which justified the adoption of SFAR 36 still exist, and in order to allow time for completion of the permanent rule change, it is in the public interest to extend the termination date of SFAR 36 from January 23, 1982, to January 23, 1984. So that previously authorized certificate holders will not be subjected to the unnecessary burden of requalifying upon expiration of the initial 2-year period, the amendment provides that each authorization issued under this SFAR has an effective period from the date of issuance until January 23, 1984. This rule extension should provide ample time for provisions to be incorporated into a permanent rule change.

Since this amendment continues in effect the provisions of a currently effective SFAR and imposes no additional burden on any person, I find that notice and public procedures hereon are unnecessary, and the amendment may be made effective in less than 30 days.

In consideration of the foregoing, effective January 23, 1980, Special Federal Aviation Regulation No. 36 is amended by changing the termination date from "January 23, 1982" to "January 23, 1984", and by revising paragraph 5.

(Secs. 313(a), 601, 604 and 607, Federal Aviation Act of 1958 as amended (49 U.S.C. 1354(a), 1421, 1424, and 1427); Sec. 6(c) of the Department of Transportation Act (49 U.S.C. 1655(c)).)

NOTE.—The FAA has determined that this document involves a rule change which is relaxatory in nature and imposes no additional burden on any person. Accordingly, it has been determined that: the rule change does not involve a major change under Executive Order 12291; it is not significant under DOT Regulatory Policies and Procedures (44 FR 11034; February 26, 1979); and its anticipated impact is so minimal that an evaluation is not required.

Special Federal Aviation Regulation 36-3
Development of Major Repair Data

Adopted: January 6, 1984 **Effective: January 31, 1984**

(Published in 49 FR 4354, February 3, 1984)

SUMMARY: This amendment extends the effectivity of Special Federal Aviation Regulation (SFAR) No. 36, which provides that repair stations, air carriers, air taxis, and commercial operators of large aircraft may accomplish major repairs using self-developed repair data which have not been specifically approved by the FAA. In addition, the regulation will continue to provide relief for persons from the burden of obtaining FAA approval of repair data on a case-by-case basis and allow time for the FAA to incorporate the SFAR provisions into the regulations.

Comments must be received on or before April 3, 1984.

ADDRESSES: Send comments on the rule in duplicate to: Federal Aviation Administration, Office of the Chief Counsel, Attn: Rules Docket (AGC-204), Docket No. 17551, 800 Independence Avenue, SW., Washington, D.C. 20591, or deliver comments in duplicate to: FAA Rules Docket, Room 916, 800 Independence Avenue, SW., Washington, D.C. Comments may be examined in the Rules Docket weekdays, except Federal holidays, between 8:30 a.m. and 5 p.m.

FOR FURTHER INFORMATION CONTACT:

Angelo R. Mastrullo, General Aviation and Commercial Branch, AWS-340, Aircraft Maintenance Division, Office of Airworthiness, Federal Aviation Administration, 800 Independence Avenue, SW., Washington, D.C. 20591, Telephone (202) 426-8203.

SUPPLEMENTAL INFORMATION:

Background

SFAR 36, which became effective on January 23, 1978, was issued to relieve qualifying certificated air carriers, air taxis, commercial operators, and repair stations of the burden of obtaining FAA approval of data developed by them for major repairs on a case-by-case basis. The certificate holders eligible for authorization under the SFAR are those employing adequately trained personnel and complying with specified procedural requirements.

SFAR 36 was adopted as an interim rulemaking action to obtain information upon which to base a permanent rule change. However, most of the affected certificate holders did not realize the provisions of SFAR 36 until it was well into its second year and near its expiration date of January 23, 1980. Since the FAA did not have sufficient data upon which to base a permanent rule change, the termination date for SFAR 36 was extended an additional 2 years, to January 23, 1982.

The FAA initiated rulemaking to consolidate certain authorizations along with those issued under SFAR 36 and make them a permanent part of the Federal Aviation Regulations. However, this rulemaking action was not completed and the termination date for SFAR 36 was extended for an additional 2 years, to January 23, 1984. Each authorization issued under this SFAR was made effective from the date of issuance until January 23, 1984. There are presently more than 20 certificated air carriers and repair stations holding SFAR 36 authorizations. For reasons unrelated to the subject matter of SFAR 36, the rulemaking project that had been continuing was canceled, and no new project is presently being developed. Consequently, to provide continuity and avoid hardship to those relying on SFAR 36 as it presently exists, the FAA finds it necessary to extend the effectivity of SFAR 36 for an additional 5 years, to January 23, 1989.

Paperwork Reduction Act

Information collection requirements in this regulation (SFAR 36) have been approved by the Office of Management and Budget under the provisions of the Paperwork Reduction Act of 1980 (P.L. 96-511) and have been assigned OMB Control Number 2120-0507.

Good Cause Justification for Immediate Adoption

The termination date for SFAR 36 and the authorizations issued under SFAR 36 is January 23, 1984. The reasons which justified the adoption of SFAR 36 still exist; and to avoid hardship to those relying on the provisions of SFAR 36, it is in the public interest to extend the termination date of SFAR 36 from January 23, 1984, to January 23, 1989. So that previously authorized certificate holders will not be subjected to the unnecessary burden of requalifying upon expiration of the initial 2-year period, the amendment provides that each authorization issued under this SFAR has an effective period from the date of issuance until January 23, 1989. This rule extension should provide ample time for provisions to be incorporated into a permanent rule change.

Since this amendment continues in effect the provisions of a currently effective SFAR and imposes no additional burden on any person, I find that notice and public procedures hereon are unnecessary, and the amendment may be made effective in less than 30 days. However, interested persons are invited to submit such comments as they may desire regarding this amendment. Communications should identify the docket number and be submitted in duplicate to the address specified above. All communications received on or before April 3, 1984, will be considered by the Administrator, and this amendment may be changed in light of the comments received. All comments received will be available, both before and after the closing date for comments, in the Rules Docket for examination by interested parties.

ADOPTION OF THE AMENDMENT

In consideration of the following, the Federal Aviation Regulations are amended effective January 31, 1984.

(Sections 313(a), 604 and 607, Federal Aviation Act of 1958 as amended (49 U.S.C. 1354(a), 1421, 1424, and 1427); 49 U.S.C. 106(g) (Revised Public Law 97-449, January 12, 1983)

NOTE: The FAA has determined that this document involves a rule change which imposes no additional burden on any person. Accordingly, it has been determined that: the rule change does not involve a major action under Executive Order 12291; it is not significant under DOT Regulatory Policies and Procedures (44 FR 11034; February 26, 1979); and its anticipated impact is so minimal that an evaluation is not required.

Special Federal Aviation Regulation 36

Operations Review Program Amendment No. 2A; Development

1. *General.* Contrary provisions of §§ 121.379(b), 127.140(b) and 145.51 of the Federal Aviation Regulations notwithstanding, a certificate holder may approve an aircraft, airframe, aircraft engine, propeller, or appliance for return to service after accomplishing a major repair if the data used for the repair was developed by that certificate holder in accordance with an authorization issued under this Special Federal Aviation Regulation.

2. *Application.* The applicant for an authorization to develop and use its own technical data for major repairs must submit an application, in writing and signed by an officer of the applicant, to the FAA District Office for the region in which the applicant is located. The application must contain—

(a) The repair station certificate number held by the repair station applicant, the current ratings covered by the certificate, and a copy of the repair station's operations specifications;

(b) The air carrier, air taxi, or commercial operator operating certificate number held by the air carrier, air taxi, or commercial operator applicant, and the products that it may maintain under the certificate;

(c) The names, signatures, and titles of the persons for whom authorization to approve the use of technical data for major repairs is requested; and

(d) A description of the applicant's staff with which compliance with section 3 of this Special Federal Aviation Regulation is to be shown.

(3) *Eligibility.*

(a) To be eligible for an authorization to develop its own technical data for major repairs, the applicant must—

(1) Hold a current domestic repair station certificate under Part 145, an air carrier certificate under Part 121 or 127, or a commercial operator certificate under Part 121, or be an air taxi operator subject to the requirements of § 135.2;

(2) Have adequate personnel, in the United States, appropriate to the products that it may maintain under its certificate; and

(3) Employ, or have available, a staff of engineering personnel who can determine compliance with the applicable airworthiness requirements of the Federal Aviation Regulations.

(b) At least one member of the staff required by paragraph (a)(3) of this section must have all of the following qualifications:

(1) A thorough working knowledge of the applicable requirements of the Federal Aviation Regulations.

(2) A position, on the applicant's staff, with authority to establish repair programs that ensure that repaired products meet the applicable requirements of the Federal Aviation Regulations.

(3) At least one year of satisfactory experience in direct contact with the FAA while processing engineering work for type certification or major repair projects.

(4) At least eight years of aeronautical engineering experience (which may include the one year required by paragraph (b) (3) of this section).

4. *Procedure Manual.*

(a) No person holding an authorization issued under this Special Federal Aviation Regulation may exercise any authority under the authorization unless he obtains FAA approval of and complies with a procedure manual containing—

(1) The procedures for developing and determining the adequacy of technical data for major repairs; and

(2) The names, signatures, and responsibilities of officials and of each staff member required by section 3 of this Special Federal Aviation Regulation, identifying those persons who—

(i) Have authority to make changes in procedures that require a revision to the procedure manual; and

(ii) Are to prepare or determine the adequacy of technical data, or both, plan or conduct tests, and approve the results of tests.

(b) No person holding an authorization issued under this Special Federal Aviation Regulation may continue to perform any authorized function affected by any change in staff necessary to continue to meet the requirements of section 3 of this Special Federal Aviation Regulation, or affected by any change in procedures from those approved under paragraph (a) of this section, unless that change is FAA-approved and entered in the manual. For this purpose, the manual must contain a "log-of-revisions" page with space for the identification of each revised item, page, date, and the signature of the person approving the change for the Administrator.

[5. *Duration of Authorization.* Each authorization issued under this Special Federal Aviation Regulations is effective from the date of issuance until January 23, 1989, unless it is surrendered or the Administrator suspends, revokes, or otherwise terminates it at an earlier date.]

6. *Maintenance of Eligibility.* Each holder of an authorization issued under this Special Federal Aviation Regulation shall continue to meet the requirements for issue of the authorization or shall notify the Administrator within 48 hours of any change (including a change of personnel) that could affect the ability of the holder to meet those requirements.

7. *Transferability.* An authorization issued under this Special Federal Aviation Regulation is not transferable.

8. *Inspections.* Upon request, each holder of an authorization issued under this Special Federal Aviation Regulation and each applicant for an authorization shall let the Administrator inspect his facilities, products, and records.

9. *Limits of Applicability.*

(a) An authorization issued under this Special Federal Aviation Regulation applies only to products—

(1) Covered by the rating of the repair station applicant and its operations specifications; and

(2) Covered by the operating certificate and maintenance manual of the air carrier, air taxi, or commercial operator applicant.

(b) Each holder of an authorization issued under this Special Federal Aviation Regulation must comply with any additional limitations prescribed by the Administrator and made a part of the authorization.

10. *Data Review and Service Experience*

(a) If the Administrator finds that a product for which repair data was developed under this Special Federal Aviation Regulation does not meet the applicable airworthiness requirements, or that an unsafe feature or characteristic caused by a defective repair exists, the holder of the authorization, upon notification by the Administrator, shall investigate the matter and report to the Administrator the results of the investigation and the action, if any, taken or proposed.

(b) If corrective action by the user of the product is necessary for safety because of any noncompliance or defect specified in paragraph (a) of this section, the holder of the authorization shall submit the information necessary for the issuance of an airworthiness directive under Part 39 of the Federal Aviation Regulations.

11. *Current Records.*

(a) Each holder of an authorization issued under this Special Federal Aviation Regulation shall maintain, at its facility, current records containing—

(1) For each product for which it has developed and used major repair data, a technical data file that includes any data and amendments thereto (including drawings, photographs, specifications, instructions, and reports) necessary for the major repair;

(2) A list of products by make, model, manufacturer's serial number and, if applicable, any FAA identification, that have been repaired under the authorization; and

(3) A file of information from all available sources on difficulties of products repaired under the authorization.

(b) The records prescribed in paragraph (a) of this section shall be—

(1) Made available by the holder of the authorization, for examination, upon the Administrator's request; and

(2) In the case of the data file prescribed in paragraph (a)(1) of this section, identified by the holder of the authorization and sent to the Administrator as soon as the holder of the authorization no longer utilizes it.

This Special Federal Aviation Regulation terminates [January 23, 1989.]

Special Federal Aviation Regulation 38

Certificate Requiremets: General

Adopted. December 12, 1978 **Effective. December 14, 1978**

(Published in 43 FR 58366, December 14, 1978)

SUMMARY: In response to the Airline Deregulation Act of 1978 (P.L. 95–504) and recent actions by the Civil Aeronautics Board, this Special Federal Aviation Regulation (SFAR) simplifies the certificate issuance procedures for air carriers and other operators engaged in air commerce. The FAA is hereby providing for the issuance of (1) an FAA air carrier operating certificate to each air carrier, as defined in the Federal Aviation Act of 1958, as amended, which will cover all operations that operator conducts under Parts 121, 127, and 135 of the Federal Aviation Regulations (FARs), and (2) and FAA operating certificate to any operator who is not an air carrier which will cover all non-air carrier operations conducted that operator under Parts 121, 123, and 135 of the FARs. Under this SFAR, only one operating certificate will be issued to an air carrier. Each type of operation an air carrier is authorized to conduct and the regulations applicable to each type operation will be specified in the air carrier's operations specifications. The impart of this SFAR is to eliminate both an immediate and future unnecessary burden on attached aircraft operations.

FOR FURTHER INFORMATION CONTACT:

Mr. Raymond E. Ramakis, Regulatory Projects Branch, Safety Regulations Division, Flight Standards Service, Federal Aviation Administration, 800 Independence Avenue, SW., Washington, D.C. 20591, telephone 202–755–8716.

SUPPLEMENTAL INFORMATION:

BACKGROUND

The Federal Aviation Regulations were designed for the issuance of one FAA operating certificate to each air carrier based on he type of operations it conducted. This regulatory plan was consistent with the economic regulations of the Civil Aeronautics Board and has worked well in the past with respect to air carrier operations conducted under certificates of public convenience and necessity or other appropriate economic authority issued by the CAB. However, the initiation by the CAB of a liberatization of its policy and regulations conerning the grant of economic authority and route authorizations together with the congressional establishment of all-cargo air services authority and the implementation of the Airline Deregulation Act of 1978 has resulted in the issuance of multiple CAB certificates, exemptions and authority authorizations with individual air carriers being granted CAB authority to conduct a variety of operations. In some cases, operators have received authority to conduct operations both as an air taxi and as an all-cargo air carrier. In other cases, domestic and flag air carriers have been granted authority to also engage in all-cargo air service operations and/or air taxi operations and some supplemental air carriers have received authority to provide scheduled domestic and/or flag service

An operator who receives CAB authority to perform a new type of service must also apply for an FAA operation certificate and/or operations specifications. Since different Parts of the FAR. are applicable to the different types of operations and each Part contains its own certification and operating rules, the issuance of multiple FAA certificates has led to duplication of requirements, unnecessary paperwork, and confusion. Moreover, the authorization of the additional authority may require the grant of exemptions from mutually exclusive requirements of the different parts. Pending a detailed review and amendment of the Federal Aviation Regulations, the FAA is adopting this Special Federal Aviation Regulation to simplify the certificate issuance procedures and eliminate the undue administrative burden the current procedural requirements place on affected operators and FAA field offices.

Under the SFAR, each air carrier, as defined under the Federal Aviation Act of 1958, as amended, will by issued an FAA air carrier operating certificate which will cover all operations that operator conducts under Parts 121, 127, and 135 of the Federal Aviation Regulations. Non-air carriers conducting operations under Parts 121, 123, and 135 will be issued an FAA operating certificate. The specific types of operation authorized under a certificate and the certification and operating rules applicable to each type of operation will be specified in the operator's operations specifications. The holder of an "An Carrier Operating Certificate" may be authorized to conduct under that certificate any of the following air carrier or non-air carrier operations specified in the current FARs, except operations under Part 123 which is applicable only to air travel clubs. The holder of an "Operating Certificate" will be limited to either those operations specified in the current regulations noted below for commercial operations or those specified for an air travel club.

Air Carrier Operating Certificate:	
Domestic Air Carrier Operations	Part 121
Flag Air Carrier Operations	Part 121
Supplemental Air Carrier Operations	Part 121
All-Cargo Air Service Operations	Part 121
Scheduled Helicopter Operations	Part 127
Air Taxi Operations—Small and Certain Large Aircraft	Part 135
Operating Certificate:	
Commercial Operations—Large Aircraft	Part 121
Commercial Operations—Small and Certain Large Aircraft	Part 135
Air Travel Club Operations Using Large Airplanes	Part 123

Although the certificate is no longer identified with a particular type of operation (e.g. domestic air carrier, air taxi operator, etc.) or with a specific Part of the Federal Aviation Regulations (e.g. Part 121 certificate holder, Part 135 certificate holder, etc.), the types of operations authorized will be identified in the operations specifications; and, the regulations applicable to each type of operation will be specified from the currently applicable regulations.

The operations specifications will be issued based on the type of aircraft the operator intends to use in the conduct of its operations. For example, an air carrier operating aircraft having a maximum passenger seating configuration, excluding any pilot seat, of 30 seats or less, and a maximum payload capacity of 7,500 pounds or less will be issued operations specification under the provisions of Revised Part 135, effective December 1, 1978, 43 FR 46742, October 10, 1978) applicable to commuter and air taxi operations. However, in accordance with the grandfather provisions of § 135.2(d), the holder of a current air taxi operator's certificate who, on December 1, 1978, conducted its operations in those aircraft under the rules of Part 121 applicable to domestic or supplemental air carriers may elect to continue to operate those aircraft under operations specifications issued under the provisions of Part 121. Air carriers operating larger aircraft will be issued operatios specifications under the provisions of Part 121. It should be noted that, depending on the type of aircraft used, and air carrier's operations specifications may include those issued under Parts 121, 127, and 135. This is consistent with the current pass-through provisions of §§ 121.9 and 135.2. Section 121.9 requires the holder of a "Part 121" certificate who conducts any operations in small and certain large airplanes to conduct those operations under the requirements of Part 135 applicable to air taxi operators. Likewise, § 135.2 requires the holder of a "Part 135" air taxi certificate who conducts any operations in certain large airplanes to conduct those operations under the applicable requirements of Part 121.

No charge in the substantive requirements applicable to the aircraft listed in the operation specifications of operators who currently hold certificates is made by this SFAR. All certificate holders will continue to comply with the provisions and limitations under which they are certificated and/or operating with respect to the type of aircraft listed in their current operation specifications.

In order to provide for the orderly transition and consolidation of the multiple certificates held by some operators, the FAA operating certificates currently held by each operator will continue to be valid until such time as an operating certificate is issued to that operator under this SFAR. Present certificate holders need not apply for the new certificate which may be issued to them in connection with applications for certificate renewals and changes in their operating authority and authorizations which require amendments to their operating certificates or operations specifications. In any event, all operators will be issued the new certificates by June 30, 1980. In this connection it should also be noted that a certificate number presently held by an operator may be transferred to the new certificate if the operator wants to retain the number.

NEED FOR IMMEDIATE ACTION

In order that air carriers issued authority by the CAB pursuant to certain provisions of the Airline Deregulation Act of 1978 may commence service pursuant to such authority within the time required by that Act, and since this special SFAR is administrative in nature and relieves an unnecessary burden on the FAA and applicants for operating certificates and changes to those certificates, I find that notice and public procedure are impracticable and contrary to the public interest and that good cause exists for making this amendment effective in less than 30 days. However, the FAA intends to review the certification procedure experience under this SFAR and interested persons are invited to participate in this process by submitting such written data, views, or arguments as they may desire ragarding this SFAR. Communications should identify the docket number and by submitted in duplicate to the Federal Aviation Administration, Office of the Chief Counsel, Attention: Rules Docket, AGC-24, 800 Independence Avenue, S.W., Washington, S.C. 20591. All communications received on or before January 31, 1979, will be considered by the Administrator and this SFAR may be changed in the light of the comments received. All comments submitted will be available, both before and after the closing date for comments, in the Rules Docket for examination by interested persons.

THE AMENDMENT

Accordingly, Special Federal Aviation Regulation No. 38 is adopted, effective December 14, 1978.

(Secs. 313(a), 601, and 604 of the Federal Aviation Act of 1958 (49 U.S.C. Sections 1354(a), 1421 and 1424); and Sec. 6(c) of the Department of Transportation Act (49 U.S.C. Section 1655(c))).

NOTE—The FAA has determined that this document is not significant under the procedures and criteria prescribed by Executive Order 12044 and as implemented by interim Department of Transportation guidelines (43 FR 9582; March 8, 1978).

Special Federal Aviation Regulation 38-1

Certificate Requirements: General

Adopted: December 27, 1984 **Effective: January 1, 1985**

(Published in 50 FR 450, January 4, 1985)

SUMMARY: This amendment extends the effectiveness of Special Federal Aviation (SFAR) No. 38. In 1978, the FAA promulgated SFAR 38 as an interim regulation to address regulatory questions arising from legislation that resulted in economic deregulation of the air transportation industry and from the Civil Aeronautics Board's (CAB) scheduled demise (or "sunset") on December 31, 1984. Having generally reviewed the FAA regulations to determine the most appropriate regulatory response to the Airline Deregulation Act of 1978 and the termination of CAB functions attendant on the CAB sunset, the FAA concludes that it is appropriate to extend the termination date of SFAR 38 to allow time for the FAA, in separate rulemaking, to propose and receive comments on certain revisions to present SFAR 38.

The termination date for SFAR 38 is extended to June 1, 1985. Comments must be received on or before March 5, 1985.

ADDRESSES: Send comments on the rule in duplicate to: Federal Aviation Administration, Office of the Chief Counsel, Attn: Rules Docket (AGC-204), Docket No. 18510, 800 Independence Avenue, S.W., Washington, D.C. 20591, or deliver comments in duplicate to: FAA Rules Docket, Room 915G, 800 Independence Avenue, S.W., Washington, D.C. Comments may be examined in the Rules Docket weekdays, except Federal holidays, between 8:30 a.m. and 5 p.m.

FOR FURTHER INFORMATION CONTACT:

Mr. David Catey, Project Development Branch, Air Transportation Division, Office of Flight Operations, Federal Aviation Administration, 800 Independence Avenue, S.W., Washington, D.C. 20591; Telephone (202) 427-4621.

SUPPLEMENTARY INFORMATION:

BACKGROUND

On December 12, 1978, the FAA promulgated SFAR 38 in consequence of the Airline Deregulation Act of 1978 (Pub. L. 95-304, 33 U.S.C. 857-14). That Act embodies the Congressional intent that the Federal Government diminish its involvement in regulating the economic aspects of the airline industry. To accomplish this, Congress directed that the Civil Aeronautics Board (CAB) be abolished, and in anticipating its sunset, the CAB curtailed or suspended much of its regulatory activity. On October 4, 1984, additional legislation was enacted further defining the process for CAB sunset.

Because some aspects of FAA safety regulations rest upon CAB definitions and authority, the FAA found it necessary in 1978 to adopt an interim measure to provide for an orderly transition from CAB and FAA interlocking authority, to a regulatory regime with no CAB in existence. SFAR 38 set out FAA certification and operating requirements applicable to all "air commerce" and "air transportation" operations for "compensation or hire" (SFAR 38 does not address Part 133 External Load Operations, Part 137 Agriculture Aircraft Operations, or Part 91 training and other special purpose operations.) The FAA has reviewed SFAR 38 and has concluded that it should be revised and clarified and that its effectiveness should be continued until at least May 1, 1986, to give the FAA time to review all of its regulations in a post-CAB sunset light. A proposed revision of SFAR 38 will soon be published for public comment in the Federal Register. This amendment merely extends the termination date of SFAR 38 to June 1, 1985, to allow adequate time for receipt and consideration of public comment on the proposed revisions to present SFAR 38 which are being undertaken in separate rulemaking.

Good Cause Justification for Immediate Adoption

The termination date for SFAR 38, and for the operating certificates issued under SFAR 38, is January 1, 1985. The reasons which justified the adoption of SFAR 38 still exist. Therefore, it is in the public interest to extend the termination date of SFAR 38 from January 1, 1985, to June 1, 1985. This action is necessary to permit continued operations under operating certificates issued under SFAR 38 and to avoid confusion in the administration of FAA regulations regarding operating certificates and operating requirements.

In addition, since this amendment continues in effect the provisions of a currently effective SFAR and imposes no additional burden on any person, I find that notice and public procedures hereon are unnecessary, impracticable, and contrary to the public interest, and that the amendment may be made effective in less than 30 days. However, interested persons are invited to submit such comments as they may desire regarding this amendment. Communications should identify the docket number and be submitted in duplicate to the address specified above. All communications received on or before the close of the comment period will be considered by the Administrator and this amendment may be changed in light of the comments received. All comments will be available, both before and after the closing date for comments, in the Rules Docket for examination by interested parties.

Trade Impact Statement

The FAA finds that this amendment will have no impact on international trade.

Regulatory Flexibility Determination

The FAA finds that the amendment will have no significant economic impact on small entities.

The FAA has determined that this document involves a rule change which imposes no additional burden on any person. Accordingly, it has been determined that: the rule change does not involve a major rule under Executive Order 12291; it is not significant under DOT Regulatory Policies and Procedures (44 FR 11034; February 26, 1979); and its anticipated impact is so mininal that full regulatory evaluation is not required.

Adoption of the Amendment

In consideration of the foregoing, Parts 121, 127 and 135 of the Federal Aviation Regulations are amended effective January 1, 1985.

By amending Special Federal Aviation Regulation No. 38 in 14 CFR Parts 121, 127, and 135, to change the termination date from "January 1, 1985," to "June 1, 1985."

(Secs. 313, 601, 603 and 1102, Federal Aviation Act of 1958 as amended (49 U.S.C. 1354, 1421, 1423, 1424, and 1502); 49 U.S.C. 106(g) (Revised, Pub. L. 97-449, January 12, 1983)).

Special Federal Aviation Regulation 38-2
Certification and Operating Requirements
Adopted: May 28, 1985 **Effective: June 4, 1985**

(Published in 50 FR 23941, June 7, 1985)

SUMMARY: These amendments: (1) Specify and clarify the type of certificate and operations specifications an operator may be issued consistent with the scope and type of its operations; (2) specify and clarify the certification requirements the operator must meet with respect to each type of operation in order to be eligible to have a specified type of operation authorized in its operations specifications; (3) clarify the regulations with which an operator must comply in the conduct of the operations specified; (4) include provisions regarding Part 125 and other regulations which have been promulgated since the adoption of Special Federal Aviation Regulation (SFAR) No. 38 and eliminate provisions that relate to Part 123 and other regulations that are no longer applicable; (5) authorize certain operators of transport category airplanes having a maximum passenger seating configuration, excluding any required crewmember seat, of 30 seats or less and a maximum payload capacity of 7,500 pounds or less to operate under the provisions of Part 121 rather than Part 135 when a specific authorization is obtained from the Administrator (the related "pass-through" provision of SFAR 38 is deleted); (6) require rotorcraft operations that may currently be subject to Parts 121 and 127 to be conducted under Part 135; and (7) include the substance of present Part 129 applicability in order to provide a comprehensive listing of certification and operations specifications requirements.

FOR FURTHER INFORMATION CONTACT: Mr. Larry Bedore, Project Development Branch, Air Transportation Division, Office of Flight Operations, Federal Aviation Administration, 800 Independence Avenue, SW., Washington, D.C. 20591, telephone (202) 472-4621.

SUPPLEMENTARY INFORMATION:

Background

On January 30, 1985, the FAA issued Notice of Proposed Rulemaking (NPRM) No. 85-3 (50 FR 4472). This Notice proposed to revise SFAR 38 primarily to specify and clarify FAA requirements for operating certificates and for operations specifications for persons who operate under Federal Aviation Regulations Parts 121 and 135. The Notice was issued to bring SFAR 38 up to date in view of changes in the regulations and in the aviation industry that had occurred since it was issued in 1978 and also as part of the FAA's continuing response to the sunset of the Civil Aeronautics Board.

This amendment updates SFAR 38 in light of changes since 1978 and clarifies those provisions in SFAR 38 that state which FAA regulations apply to a particular air carrier for the type of operation the air carrier is conducting in the areas summarized below. A fuller discussion of each area is contained in the preamble to NPRM 85-3.

One of the purposes of this amendment is to clearly define, for each type of operation (e.g., scheduled common carriage within the United States, all-cargo operations, scheduled common carriage outside the United States, etc.): (1) The type of certificate, (2) the certification requirements, (3) the operations specifications, and (4) the regulations within the applicable Parts of the FAR with which an operator must comply when conducting each type of operation.

As amended, SFAR 38-2 makes it clear that wherever the term "commuter air carrier" appears in Part 135 of the FAR, it shall be deemed to mean a holder of an "Air Carrier Operating Certificate" that is conducting scheduled passenger carrying operations with a frequency of operations of at least five round trips per week on at least one route between two or more points according to published flight schedules. This frequency of operations is a standard currently accepted by the industry and the FAA for air carrier certification and operation rules. However, this definition would not apply to Part 93 of the FAR. Further, a regulation that applies to a commuter air carrier will be deemed to mean a regulation that applies to scheduled passenger-carrying operations conducted under Part 135.

SFAR 38-2 allows the Administrator to authorize an air carrier who would otherwise be subject to Part 135 to elect to conduct its operations with transport category airplanes under Part 121. However, an air carrier is not allowed to operate airplanes subject to Part 121 under Part 135.

SFAR 38-2 does not reference § 135.2, and any air carrier conducting its operations under the "pass-through" provision is required to conduct its operations under Part 135, unless it receives authorization from the Administrator to conduct its operation under Part 121.

SFAR 38 is updated by adding provisions which reference Part 125 which became effective February 3, 1981, and deletes the provisions relating to Part 123 which was revoked effective January 1, 1983.

SFAR 38-2 requires rotorcraft operations that are now conducted under Part 121 or Part 127 to be conducted under Part 135. The amendment, in effect, suspends Part 127 and §§ 121.13 and 121.157(e), and requires all rotorcraft operations to be conducted under Part 135.

As amended, SFAR 38-2 includes the substance of the applicability of present Part 129 in order to provide for a comprehensive listing of certification and operations specifications requirements.

SFAR 38 as revised by this amendment will be effective until May 1, 1986, unless sooner superseded or revoked.

Comments on Proposed SFAR 38-2

During the comment period, the FAA received 15 comments. The limited number of comments received and the tone of the comments indicate overall substantial agreement with proposed SFAR 38-2. A few commenters recommended minor changes or raised questions about certain provisions of SFAR 38-2.

One commenter questioned whether the opening sentence of SFAR 38-2 which reads "Contrary provisions of Parts 121, 125, 127, 129, and 135 of the Federal Aviation Regulations notwithstanding," may create confusion. The "notwithstanding" clause is a carryover from original SFAR 38 and it does not appear to have caused the kind of confusion the commenter suggests.

Four commenters request that the phrase "passenger seating capacity" in proposed paragraphs 4(a) and 4(b) be changed to "passenger seating configuration" as it is in current SFAR 38 paragraphs 2(a) and (b) and 3(a) and (b). The reason is that the proposed wording would mean that if an aircraft has been certificated for a certain maximum seating capacity, that figure would be the compliance factor, rather than the number of installed passenger seats in the aircraft. The FAA did not intend to change the criteria for compliance and has, therefore, changed the language back to "passenger seating configuration" as it appears in the provisions of present SFAR 38 cited above.

For consistency of language within SFAR 38-2 and also for consistency of application of the FAR, the term "passenger seating capacity" in paragraph 5(a), which relates to Part 125 has also been changed to "passenger seating configuration" even though Part 125 (section 125.1(a)) presently uses "seating capacity." The FAA does not consider this a substantive change since Part 125 has been applied on the basis of seating "configuration" rather than seating "capacity."

One commenter objected to the phrase "certain procedures" used in Section 3 as being unclear. The commenter suggested changing "certain procedures" to "appropriate regulations." The FAA does not agree. The term "certain procedures" refers to procedures that may be included in operations specifications to reflect requirements imposed on a specific operator in addition to the Federal Aviation Regulations. Examples would include specific procedures that might be tied in with a deviation or an exemption approved for that carrier. The commenter also objected to the phrase "size of aircraft" in Section 3 as not being sufficiently specific. The commenter suggested changing "size of aircraft" to "seating and payload capacity." The commenter's point is valid and has been adopted by inclusion of a definition of "size of aircraft" in Section 6(c). Also, in Section 1(a) and in Section 3, the word "type" in reference to type of aircraft, has been changed to "class" to make it clear that the distinction intended is not between types of aircraft (e.g., B-727, DC-8, etc.) but rather between classes of aircraft (e.g., airplane, rotorcraft, etc.).

One commenter suggests that the preamble statements regarding CAB sunset be updated to show that a finding of fitness is a continuing requirement under the sunset legislation and that the Department of Transportation now has this function formerly handled by the CAB. The FAA agrees. The NPRM preamble was written before the 1984 amendments to the Airline Deregulation Act of 1978, (Pub. L. 98-443, October 4, 1984) which stipulated that DOT will continue the CAB function of determining fitness.

One commenter objects to the explanation in the preamble concerning confusion as to applicable regulations resulting from the sunset of the CAB. This commenter states that an FAA policy change, rather than confusion, was responsible for the FAA's requiring 21 carriers to shift from the supplemental rules of Part 121 to the domestic or flag rules of Part 121, as appropriate. This point was addressed in the preamble to the proposed revision of SFAR 38 as follows:

"It is the FAA's position that an air carrier certificated under current SFAR 38 in accordance with the rules of Part 121 must, if it is engaged in scheduled passenger operations, operate in accordance with the rules applicable to domestic or flag air carriers as required by § 121.3(a) or § 121.3(c) and be issued domestic and flag operations specifications. Furthermore, it is the FAA's position that an air carrier engaged in nonscheduled passenger-carrying operations must operate in accordance with the rules applicable to supplemental air carriers in accordance with § 121.3(e) and be issued supplemental operations specifications. The FAA has issued interpretive material to explain the correct application of these rules, but believes that the regulations should be clarified."

These 21 operators now have the appropriate operations specifications and have been brought in compliance with the applicable regulations in Part 121 so that this revision of SFAR 38 imposes no burden.

This commenter also thought that elimination of the "pass-through" provision in paragraph 2(d) of SFAR 38 would impose a similar burden. However, the inclusion of paragraph 4(b) as proposed allows persons operating transport category airplanes to obtain approval from the Administrator to conduct those operations under the appropriate provisions of Part 121. This provision is less limited than the original pass-through provision (which applied only to operations existing on December 1, 1978) and applies only when requested by the operator and approved by the Administrator.

Two commenters object to the definition of "commuter air carriers." One of the commenters seems to object to applying the term "commuter" to air carriers who are operating under Part 121 domestic rules, but who are operating propeller driven aircraft of less than 60 seats. Such operators consider themselves to be "regional" air carriers who compete equally with other types of air carriers. However, the definition of commuter air carriers does not apply to operations under Part 121 because it applies only to operations under Part 135 with aircraft having a maximum passenger seating configuration of 30 seats or less and a maximum payload capacity of 7,500 pounds or less.

A second commenter objects to provisions in the definition of "commuter air carriers" that state that frequency of operations is "at least five round trips per week on at least one route between two or more points . . . ." The commenter objects on the basis that the definition constitutes a public convenience and necessity requirement and that the authority domestically to issue a Certificate of Public Convenience and Necessity for domestic operations was terminated by Congress on January 1, 1982. In response, the FAA does not intend by this definition to create a public convenience and necessity requirement in the "commuter air carrier" definition. The definition has been used historically in Part 135 to refer to scheduled operations as opposed to non-scheduled. To preclude a change in the operations requirements prescribed in SFAR 38, the commuter air carrier route and frequency stipulation is needed in the SFAR 38-2 definition in order to continue to exclude those operators who may fly fewer than five round trips per week from certain commuter air carrier requirements prescribed in Part 135.

A commenter objected to the definition of "scheduled operations." According to the commenter, the definition would require charter operators to be issued domestic air carrier operations specifications if they were to contract for a series of public charters. The FAA does not agree that this definition includes legitimate charter operations. Scheduled operations by definition depart at a stated time and place and are readily available to the general public. While, on occasion, "charter" flights are "announced" in advance, the charter operator normally does not commit to having the flight operate unless a minimum load of passengers is booked in advance. Thus, the general public cannot depend upon a chartered flight maintaining a schedule (for example, there may be a last minute flight cancellation because not enough passengers signed up for the flight) as they can on a scheduled flight. An operator who attempts to hold itself out as a charter operator but who, in fact, announces regularly scheduled flights to the public would be considered a scheduled operator and would have to comply with the regulations for scheduled operations under Part 121 or Part 135, as appropriate.

Two commenters expressed concern that the definition of "air carriers" in Section 6(c)(1) would require all indirect "air carriers" to have operating certificates and operations specifications under Section 1(c) which states that "no person may operate without, or in violation of, a certificate and operations specifications issued under this SFAR."

While it is true, as these commenters point out, that the Federal Aviation Act of 1958 defines "air carrier" to include one who acts "indirectly," the FAA has never extended its air carrier regulations to persons who are legitimately engaged in indirect operations such as bona fide freight forwarder. SFAR 38-2 does not treat indirect operators any differently than current SFAR 38 and so there is no substantive change. However, this does not mean that an indirect air carrier can avoid air carrier certification requirements if, in fact, that carrier is engaged in the operation of aircraft or exercises its authority over initiating, conducting, or terminating a flight or flights.

One commenter states that the application of Part 135 is somewhat open-ended with respect to rotorcraft having a passenger seating configuration of more than 30 seats or a maximum payload capacity of more than 7,500 pounds. The commenter states that in their responses to other rulemaking proposals concerning rotorcraft, such as Notice No. 85-8 (50 FR 10144, March 13, 1985), industry groups must now consider future operations of larger helicopters under Part 135. In response, the FAA notes that the proposal to require all sizes of rotorcraft to be operated under Part 135 is based on the recognition that there are significant deficiencies in Parts 121 and 127 that must be addressed before authorizing any rotorcraft operations under those rules. The issuance of special operations specifications is identified in the preamble of the proposal as an option to permit the operation of larger rotorcraft under Part 135. In the meantime, Exemptions Nos. 4109 and 4297 have been issued to two operators to permit the operation of BV-234 helicopters under Part 135. The FAA recognizes that additional rulemaking is needed to adequately cover the operation of rotorcraft having a passenger seating configuration of more than 30 seats, excluding any required crewmember seat, or a payload capacity of more than 7,500 pounds. In the interim, since Part 135 does not presently address that size rotorcraft, operators of these rotorcraft will be issued special operations specifications which will provide for the appropriate level of safety required for that size aircraft. New paragraphs 4(d) and 5(d) are added to this SFAR to clarify this point, and to spell out what was intended in the NPRM.

Three commenters suggest changes which are beyond the scope of this Notice of Proposed Rulemaking. As stated earlier in this notice and in the NPRM, this rulemaking updates and clarifies SFAR-38; it does not substantively revise the basic applicability of the affected parts. Therefore, these recommendations for substantive change beyond the scope of Notice 85-3 have not been considered in this rulemaking.

Good Cause Justification for Immediate Adoption

The termination date for SFAR 38 as extended by SFAR 38-1, is June 1, 1985. There are numerous operating certificates issued under the provisions of SFAR 38, as amended. In order to avoid confusion in the administration of FAA regulations regarding operating certificates and operating requirements, it is necessary that this amendment be effective as soon as possible. Therefore, I find that good cause exists for making this amendment effective in less than 30 days.

Economic Impact

The FAA evaluated the economic impact of this amendment. This amendment is not expected to cause an adverse economic impact on the regulated parties because it is essentially clarifying in nature. The findings of FAA's evaluation are summarized below and a copy of the regulatory evaluation is contained in the docket.

The rule (1) Specifies and clarifies certification requirements and regulations operators must comply with in conducting specific operations, (2) includes regulations that have been promulgated and deletes references to regulations that have been withdrawn since the adoption of SFAR 38, and (3) suspends regulations that are no longer applicable.

As previously pointed out, it is the FAA's position that the current regulations require scheduled operations in airplanes with more than 30 passenger seats to be conducted under the domestic or flag air carrier rules. Therefore, as the result of this rule, there should be minimal economic impact on the approximately 21 carriers previously discussed. Accordingly, a full economic evaluation is not required. Notwithstanding the above position, an evaluation was performed. This evaluation reveals that a small net benefit will accrue to the affected carriers because costs that may result from having to comply with the domestic and flag rules would be more than offset by cost savings associated with relaxation of reserve fuel requirements.

SFAR 38-2 suspends Part 127 and requires all rotorcraft carriers currently operating under Parts 121 and 127 to conduct their operations under Part 135. Such a change is expected to enhance safety because Part 135 contains safety related requirements for rotorcraft not specified in either Part 121 or 127. This rule will not generate any additional costs to regulated parties. At present, only two carriers, under exemption authority, operate rotorcraft with a capacity in excess of 30 seats or a 7,500-pound payload under Part 135. These rotorcraft would normally be subject to the provisions of Part 121 or 127. Moreover, commuter operations with large rotorcraft currently do not appear feasible at locations where the geographical distribution of service points make rotorcraft operations viable.

Trade Impact Statement

The FAA finds that the amendment will have no impact on international trade.

Regulatory Flexibility Determination

The FAA finds that the amendment will have no consequential economic impact on small entities. Accordingly, the FAA finds that an initial regulatory flexibility analysis is not required by the Regulatory Flexibility Act.

Conclusion

For the reasons stated under the heading "Economic Impact," the FAA has determined that this document involves a rule which: (1) Is not a major rule under Executive Order 12291; and (2) is not a significant rule under Department of Transportation Regulatory Policies and Procedures (44 FR 11034; Feb. 26, 1979). Also, for the reasons stated under the heading "Trade Impact Statement and Regulatory Flexibility Determination," I certify that the rule will not have a substantial economic impact on a substantial number of small entities. The total projected impact of the amendment may be found in a copy of the regulatory evaluation contained in the public docket. A copy of that evaluation may be obtained by contacting the person identified above under the caption "FOR FURTHER INFORMATION CONTACT."

THE AMENDMENT

In consideration of the above, SFAR 38 (14 CFR Parts 121, 125, 127, 129, and 135 is revised effective June 4, 1985.

Authority: 49 U.S.C. 1354(a), 1421, 1423, 1424, and 1502; 49 U.S.C. 106(g) (revised Pub. L. 97-449, January 12, 1983).

Special Federal Aviation Regulation 38-3
Certification and Operating Requirements

Adopted: April 30, 1986 **Effective: May 8, 1986**

(Published in 51 FR 17274, May 9, 1986)

SUMMARY: These amendment extends the effectiveness of Special Federal Aviation Regulations (SFAR) No. 38-2 (50 FR 23941; June 7, 1985). SFAR 38– revised SRAR 38 primarily by specifying and clarifying FAA requirements for operating certificates and operations specifications for persons who operate under Federal Aviation Regulations (FAR) Parts 121 and 135. The amendment brought SFAR 38 up to date in view of changes in the regulations and the aviation industry that had occurred since it was issued in 1978 and also as part of the FAA's response to the sunset of the Civil Aeronautics Board (CAB). Having generally reviewed the FAA regulations to determine the most appropriate response to the Airline Deregulation Act of 1978 (ADA) and the termination of CAB functions attendant on the CAB sunset, the FAA now concludes that it is necessary to extend the termination date of SFAR 38-2 to allow time for the FAA, in a separate rulemaking action, to propose and receive comments on the incorportaion of SFAR 38-2 into the FAR. The termination date for SFAR 38-2 is extended to June 1, 1987. The FAA intends to publish a notice rescinding SFAR 38-2 and a final rule incorporating SFAR 38-2 into the FAR concurrently in the Federal Register.

Comments must be received on or before June 9, 1986.

ADDRESSES: Send comments on the rule in duplicate to: Federal Aviation Administration, Office of the Chief Counsel, Attn: Rules Docket (AGC-204), Docket No. 18510, 800 Independence Avenue, S.W., Washington, D.C. 20591, or deliver comments in duplicate to: Federal Aviation Administration, Rules Docket, Room 916, 800 Independence Avenue, S.W., Washington, D.C. Comments may be examined in the Rules Docket weekdays, except Federal holidays, between 8:30 a.m. and 5 p.m.

FOR FURTHER INFORMATION CONTACT: Mr. Michael Coffey, Project Development Branch, AFS-240, Air Transportation Division, Office of Flight Standards, Federal Aviation Administration, 800 Independence Avenue, S.W., Washington, D.C. 20591, telephone (202) 426-8096.

Background

On December 12, 1978, the FAA promulgated SFAR 38 in consequence of the ADA (Pub. L. 95-504, 92 Stat. 1705). That Act embodies the Congressional intent that the Federal Government diminish its involvement in regulating the economic aspects of the airline industry. To accomplish this, Congress directed that the CAB be abolished on December 31, 1984. Anticipating its sunset, the CAB curtailed or suspended much of its regulatory activity during the period 1979–1984. On October 4, 1984, additional legislation was enacted further defining the process of CAB sunset. On Janusry 1, 1985, those remaining CAB functions were transferred to the Department of Transportation (DOT).

Because some aspects of FAA safety regulation relied upon CAB definitions and authority, the FAA found it necessary in 1978 to adopt an interim measure to provide for an orderly transition from CAB and FAA interlocking authority to a regulatory regime with no CAB in existence. This action was consistent with the Congressional directive contained in Section 107(a) of the Act that the deregulation of airline economics result in no diminution of the high standard of safety in air transportation which existed when the ADA was enacted. SFAR 38 set forth FAA certification and operating requirements applicable to all "air commerce" and " air transportation" operations for "compensation or hire" (SFAR 38 did not address Part 133 External Load Operations, Part 137 Agriculture Aircraft Operations, or Part 91 training and other special purpose operations.)

On December 27, 1984, the FAA adopted SFAR 38-1 which merely extended the termination date of the regulation, and allowed the FAA time to propose and receive comments on revising SFAR 38.

On May 28, 1985, the FAA adopted SFAR 38-2, which updated SFAR 38 in light of changes since 1978 and clarified provisions that state which FAA regulations apply to each air carrier and each type of operation. This action was necessary because of the changes in the air transportation industry brought about by economic deregulation. Before deregulation, economic certificates were fairly rigidly compartmentalized and each air carrier typically was authorized to conduct only one type of operation (domestic, flag, or charter (supplemental)). The safety certificate issued to the air carrier by the FAA paralleled the authorization granted in the air carrier's economic certificate. Economic deregulation broke down the barriers between the various types of operations. The economic authority granted an air carrier by the DOT is no longer indicative of the safety regulations applicable to the type of operation authorized by the FAA. Thus, it was necessary for the FAA to establish guidelines to determine what safety standards were applicable to an air carrier's particular operation.

Good Cause Justification for Immediate Adoption

The termination date for SFAR 38-2 and the operating cedrtificates issued under SFAR 38, as amended, is May 1, 1986. The reasons which justified the adoption, and the subsequent revision, of SFAR 38 still exist. The FAA is currently preparing a Notice of Proposed Rulemaking (NPRM) which will consolidate the certification rules now in Parts 121 and 135 into a new Part of the FAR. This NPRM will also propose incorporating the necessary portions of SFAR 38-2 into the FAR. Therefore, it is in the public interest to extend the termination date of SFAR 38-2 from May 1, 1986 to June 1, 1987, although the FAA anticipates that a final rule incorporating SFAR 38-2 in the FAR will be published before then. If it is, a notice rescinding SFAR 38-2 will be published concurrently. This action is necessary to permit continued operations under operating certificates issued under SFAR 38, as amended, and to avoid confusion in the administration of FAA regulations regarding operating certificates and operating requirements.

In addition, since this amendment continues in effect the provisions of a currently effective SFAR and imposes no additional burden on any person, I find that notice and public procedures are unnecessary, impracticable, and contrary to the public interest, and that the amendment should be made effective in less than 30 days after publication. However, interested persons are invited to submit such comments as they may desire regarding this amendment. Communications should identify the docket number and be submitted in duplicate to the address above. All communications received on or before the close of the comment period will be considered by the Administrator, and this amendment may be changed in light of the comments received. All comments will be available, both before and after the closing date for comments, in the Rules Docket for examination by interested parties.

Trade Impact Statement

The FAA finds that this amendment will have no impact on international trade.

Conclusion

The FAA has determined that this document involves a rule change which imposes no additional burden on any person. Accordingly, it has been determined that: the rule change does not involve a major rule under Executive Order 12291; it is not significant under DOT Regulatory Policies and Procedures (44 FR 11034; February 26, 1979); and its anticipated impact is so minimal that a full regulatory evaluation is not required.

Adoption of the Amendment

In consideration of the foregoing, SFAR 38-2 (14 CFR Parts 121, 125, 127, 129, and 135) of the Federal Aviation Regulations is effective May 8, 1986.

The authority citation for SFAR 38-2 continues to read as follows:

Authority: 49 U.S.C. 1354(a), 1421, 1423, and 1502; 49 U.S.C. 106(g) (Revised Pub. L. 97-449, January 12, 1983).

Special Federal Aviation Regulation 38-4

Certification and Operating Requirements

Adopted: July 15, 1987 **Effective: August 4, 1987**

(Published in 52 FR 28938, August 4, 1987)

SUMMARY: This amendment reinstates Special Federal Aviation Regulation (SFAR) No. 38-2 (50 FR 23941; June 7, 1985) and establishes a new termination date. The SFAR 38-2 was previously amended by SFAR 38-3 (51 FR 17274; May 9, 1986) to extend its termination date to allow time for the FAA, in a separate rulemaking action, to prepare a Notice of Proposed Rulemaking (NPRM) that would consolidate the certification rules now in Parts 121 and 135 into a new part of the FAR. This NPRM would also propose incorporating the necessary portions of SFAR 38-2 into the FAR. Having generally reviewed the FAA regulations to determine the most appropriate response to the Airline Deregulation Act of 1978 (ADA) and the termination of CAB functions following the CAB sunset, the FAA now concludes that it is necessary to renew the effectiveness of SFAR 38-2 and to establish a new termination date to allow time for the FAA to complete the rulemaking process that will consolidate the certification rules and incorporate SFAR 38-2 into the FAR. The termination date for reinstated SFAR 38-2 is June 1, 1989. The FAA intends to publish a notice rescinding SFAR 38-2 and a final rule incorporating SFAR 38-2 into the FAR concurrently in the Federal Register.

Comments must be received on or before October 5, 1987.

ADDRESSES: Send comments on the rule in duplicate to Federal Aviation Administration, Office of the Chief Counsel, Attn.: Rule Docket (AGC-204), Docket No. 18518, 800 Independence Avenue S.W., Washington, DC 20591, or deliver comments in duplicate to: Federal Aviation Administration, Rule Docket, Room 916, 800 Independence Avenue S.W., Washington, DC. Comments may be examined in the Rules Docket weekdays, except Federal holidays, between 8:30 a.m. and 5 p.m.

FOR FURTHER INFORMATION CONTACT: Mr. Michael Coffey, Project Development Branch, AFS-240, Air Transportation Division, Office of Flight Standards, Federal Aviation Administration, 800 Independence Avenue S.W., Washington, DC 20591. Telephone (202) 267-3750.

SUPPLEMENTARY INFORMATION:

Background

On December 12, 1978, the FAA promulgated SFAR 38 (43 FR 58366; December 14, 1978) in consequence of the ADA (Pub. L. 95-504, 92 Stat. 1705). That Act expresses the Congressional intent that the Federal Government diminish its involvement in regulating the economic aspects of the airline industry. To accomplish this, Congress directed that the CAB be abolished on December 31, 1984, and that various of its functions cease before that date. Anticipating its sunset, the CAB itself curtailed or suspended much of its regulatory activity during the period 1979-1984. On October 4, 1984, additional legislation was enacted further defining the process of CAB sunset. On January 1, 1985, the remaining CAB functions were transferred to the Department of Transportation (DOT).

Because some aspects of FAA safety regulation relied upon CAB definitions and authority, the FAA found it necessary in 1978 to adopt an interim measure to provide for an orderly transition from CAB and FAA interlocking authority to a regulatory regime with no CAB in existence. This action was consistent with the Congressional directive contained in Section 107(a) of the Act that the deregulation of airline economics result in no diminution of the high standards of safety in air transportation that existed when the ADA was enacted. The SFAR 38 set forth FAA certification and operating requirements applicable to all "air commerce" and "air transportation" operations for "compensaton or hire." (SFAR 38 did no address Part 133 External Load Operations, Part 137 Agriculture Aircraft Operations, or Part 91 training and other special purpose operations.)

On December 27, 1984, the FAA adopted SFAR 38-1 (50 FR 450; January 4, 1985), which merely extended the termination date of the regulation and allowed the FAA time to propose and receive comments on revising SFAR 38.

On May 28, 1985, the FAA adopted SFAR 38-2, which updated SFAR 38 in light of changes since 1978 and clarified provisions stating which FAA regulations apply to each air carrier and each type of operation. This action was necessary because of the changes in the air transportation industry brought about by economic deregulation. Before deregulation, economic certificates were fairly rigidly compartmentalized and each air carrier typically was authorized to conduct only one type of operation (domestic, flag, or charter (supplemental)). The safety certificate issued to the air carrier by the FAA paralleled the authorization granted in the air carrier's economic certificate. Economic deregulation broke down the barriers between the various types of operations. The economic authority granted an air carrier by the DOT is no longer indicative of the safety regulations applicable to the type of operation authorized by the FAA. Thus, it was necessary for the FAA to establish guidelines to determine what safety standards were applicable to an air carrier's particular operation.

On May 8, 1986, the FAA adopted SFAR 38-3, which merely extended the termination date of SFAR 38-2 to allow the FAA time to incorporate its contents into an NPRM that will propose consolidation of the certification rules in Parts 121 and 135, and will incorporate various provisions of SFAR 38-2 into a new part of the FAR.

Good Cause Justification For Immediate Adoption

Because of unavoidable, administrative delays, SFAR 38-2 terminated on June 1, 1987. The reasons which justified the adoption, and the subsequent revision, of SFAR 38 still exist. Therefore, it is in the public interest to reinstate SFAR 38-2 and to establish a new termination date of June 1, 1989, although the FAA anticipates that a final rule incorporating SFAR 38-2 into the FAR will be published before then. If it is, a notice rescinding SFAR 38-2 will be published concurrently. This action is necessary to permit continued operations under SFAR 38, as amended, and to avoid confusion in the administration of FAA regulations regarding operating certificates and operating requirements.

For this reason, and because this amendment continues in effect the provisions of a currently effective SFAR and imposes no additional burden on any person, I find that notice and public procedures are unnecessary, impracticable, and contrary to the public interest, and that the amendment should be made effective in less than 30 days after publication. However, interested persons are invited to submit such comments as they may desire regarding this amendment. Communications should identify the docket number and be submitted in duplicate to the address above. All communications received on or before the close of the comment period will be considered by the Administrator, and this amendment may be changed in light of the comments received. All comments will be available, both before and after the closing date for comments, in the Rules Docket for examination by interested parties.

Trade Impact Statement

The FAA finds that this amendment will have no impact on international trade.

Conclusion

The FAA has determined that this document involves an amendment that imposes no additional burden on any person. Accordingly, it has been determined that: The action does not involve a major rule under Executive Order 12291; it is not significant under DOT Regulatory Policies and Procedures (44 FR 11034; February 26, 1979); and its anticipated impact is so minimal that a full regulatory evaluation is not required.

Adoption of the Amendment

In consideration of the foregoing, SFAR 38-2 (14 CFR Parts 121, 125, 127, 129, and 135) of the Federal Aviation Regulations is reinstated, effective August 4, 1987.

The authority citation for Part 135 continues to read as follows:

Authority: 49 U.S.C. 1354(a), 1355(a), 1421 through 1431, and 1502; 49 U.S.C. 106(g) (revised Pub. L. 97-449, January 12, 1983).

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[Special Federal Aviation Regulation 38-2
Certification and Operating Requirements

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[Special Federal Aviation Regulation 38-2

[Contrary provisions of Parts 121, 125, 127, 129, and 135 of the Federal Aviation Regulations notwithstanding—

1. *Applicability.*

(a) This Special Federal Aviation Regulation applies to persons conducting commercial passenger operations, cargo operations, or both, and prescribes—

(1) The types of operating certificates issued by the Federal Aviation Administration;

(2) The certification requirements an operator must meet in order to obtain and hold operations specifications for each type of operation conducted and each class and size of aircraft operated; and

(3) The operating requirements an operator must meet in conducting each type of operation and in operating each class and size of aircraft authorized in its operations specifications.

A person shall be issued only one certificate and all operations shall be conducted under that certificate, regardless of the type of operation or the class or size of aircraft operated. A person holding an air carrier operating certificate may not conduct any operations under the rules of Part 125.

(b) Persons conducting operations under more than one paragraph of this SFAR shall meet the certification requirements specified in each paragraph and shall conduct operations in compliance with the requirements of the Federal Aviation Regulations specified in each paragraph for the operation conducted under that paragraph.

(c) Except as provided under this SFAR, no person may operate as an air carrier or as a commercial operator without, or in violation of, a certificate and operations specifications issued under this SFAR.

2. *Certificates and foreign air carrier operations specifications.*

(a) Persons authorized to conduct operations as an air carrier will be issued an Air Carrier Operating Certificate.

(b) Persons who are not authorized to conduct air carrier operations, but who are authorized to conduct passenger, cargo, or both, operations as a commercial operator will be issued an Operating Certificate.

(c) FAA certificates are not issued to foreign air carriers. Persons authorized to conduct operations in the United States as a foreign air carrier who hold a permit issued under Section 402 of the Federal Aviation Act of 1958, as amended (49 U.S.C. 1372), or other appropriate economic or exemption authority issued by the appropriate agency of the United States of America will be issued operations specifications in accordance with the requirements of Part 129 and shall conduct their operations within the United States in accordance with those requirements.

3. *Operations specifications.*

The operations specifications associated with a certificate issued under paragraph 2(a) or (b) and the operations specifications issued under paragraph 2(c) of this SFAR will prescribe the authorizations, limitations and certain procedures under which each type of operation shall be conducted and each class and size of aircraft shall be operated.

4. *Air carriers, and those commercial operators engaged in scheduled intrastate common carriage.*

Each person who conducts operations as an air carrier or as a commercial operator engaged in scheduled intrastate common carriage of persons or property for compensation or hire in air commerce with—

(a) Airplanes having a passenger seating configuration of more than 30 seats, excluding any required crewmember seat, or a payload capacity of more than 7,500 pounds, shall comply with the certification requirements in Part 121, and conduct its—

(1) Scheduled operations within the 48 contiguous states of the United States and the District of Columbia, including routes that extend outside the United States that are specifically authorized by the Administrator, with those airplanes in accordance with the]

[requirements of Part 121 applicable to domestic air carriers, and shall be issued operations specifications for those operations in accordance with those requirements.

(2) Scheduled operations to points outside the 48 contiguous states of the United States and the District of Columbia with those airplanes in accordance with the requirements of Part 121 applicable to flag air carriers, and shall be issued operations specifications for those operations in accordance with those requirements.

(3) All-cargo operations and operations that are not scheduled with those airplanes in accordance with the requirements of Part 121 applicable to supplemental air carriers, and shall be issued operations specifications for those operations in accordance with those requirements; except the Administrator may authorize those operations to be conducted under paragraph (4) (a) (1) or (2) of this paragraph.

(b) Airplanes having a maximum passenger seating configuration of 30 seats or less, excluding any required crewmember seat, and a maximum payload capacity of 7,500 pounds or less, shall comply with the certification requirements in Part 135, and conduct its operations with those airplanes in accordance with the requirements of Part 135, and shall be issued operations specifications for those operations in accordance with those requirements; except that the Administrator may authorize a person conducting operations in transport category airplanes to conduct those operations in accordance with the requirements of paragraph 4(a) of this paragraph.

(c) Rotorcraft having a maximum passenger seating configuration of 30 seats or less and a maximum payload capacity of 7,500 pounds or less shall comply with the certification requirements in Part 135, and conduct its operations with those aircraft in accordance with the requirements of Part 135, and shall be issued operations specifications for those operations in accordance with those requirements.

(d) Rotorcraft having a passenger seating configuration of more than 30 seats or a payload capacity of more than 7,500 pounds shall comply with the certification requirements in Part 135, and conduct its operations with those aircraft in accordance with the requirements of Part 135, and shall be issued special operations specifications for those operations in accordance with those requirements and this SFAR.

5. *Operations conducted by a person who is not engaged in air carrier operations, but is engaged in passenger operations, cargo operations, or both, as a commercial operator.*

Each person, other than a person conducting operations under paragraph 2(c) or 4 of this SFAR, who conducts operations with—

(a) Airplanes having a passenger seating configuration of 20 or more, excluding any required crewmember seat, or a maximum payload capacity of 6,000 pounds or more, shall comply with the certification requirements in Part 125, and conduct its operations with those airplanes in accordance with the requirements of Part 125, and shall be issued operations specifications in accordance with those requirements, or shall comply with an appropriate deviation authority.

(b) Airplanes having a maximum passenger seating configuration of less than 20 seats, excluding any required crewmember seat, and a maximum payload capacity of less than 6,000 pounds shall comply with the certification requirements in Part 135, and conduct its operations in those airplanes in accordance with the requirements of Part 135, and shall be issued operations specifications in accordance with those requirements.

(c) Rotorcraft having a maximum passenger seating configuration of 30 seats or less and a maximum payload capacity of 7,500 pounds or less shall comply with the certification requirements in Part 135, and conduct its operations in those aircraft in accordance with the requirements of Part 135, and shall be issued operations specifications for those operations in accordance with those requirements.

(d) Rotorcraft having a passenger seating configuration of more than 30 seats or a payload capacity of more than 7,500 pounds shall comply with the certification requirements in Part 135, and conduct its operations with those aircraft in accordance with the requirements of Part 135, and shall be issued special operations specifications for those operations in accordance with those requirements and this SFAR.]

[6. *Definitions.*

(a) Wherever in the Federal Aviation Regulations the terms—

(1) "Domestic air carrier operating certificate," "flag air carrier operating certificate," "supplemental air carrier operating certificate," or "commuter air carrier" (in the context of Air Carrier Operating Certificate) appears, it shall be deemed to mean an "Air Carrier Operating Certificate" issued and maintained under this SFAR.

(2) "ATCO operating certificate" appears, it shall be deemed to mean either an "Air Carrier Operating Certificate" or "Operating Certificate," as is appropriate to the context of the regulation. All other references to an operating certificate shall be deemed to mean an "Operating Certificate" issued under this SFAR unless the context indicates the reference is to an Air Carrier Operating Certificate.

(b) Wherever in the Federal Aviation Regulations a regulation applies to—

(1) "Domestic air carriers," it will be deemed to mean a regulation that applies to scheduled operations solely within the 48 contiguous states of the United States and the District of Columbia conducted by persons described in paragraph 4(a)(1) of this SFAR.

(2) "Flag air carriers," it will be deemed to mean a regulation that applies to scheduled operations to any point outside the 48 contiguous states of the United States and the District of Columbia conducted by persons described in paragraph 4(a)(2) of this SFAR.

(3) "Supplemental air carriers," it will be deemed to mean a regulation that applies to charter and all-cargo operations conducted by persons described in paragraph 4(a)(3) of this SFAR.

(4) "Commuter air carriers," it will be deemed to mean a regulation that applies to scheduled passenger carrying operations, with a frequency of operations of at least five round trips per week on at least one route between two or more points according to the published flight schedules, conducted by persons described in paragraph 4(b) or (c) of this SFAR. This definition does not apply to Part 93 of this chapter.

(c) For the purpose of this SFAR, the term—

(1) "Air carrier" means a person who meets the definition of an air carrier as defined in the Federal Aviation Act of 1958, as amended.

(2) "Commercial operator" means a person, other than an air carrier, who conducts operations in air commerce carrying persons or property for compensation or hire.

(3) "Foreign air carrier" means any person other than a citizen of the United States, who undertakes, whether directly or indirectly or by lease or any other arrangement, to engage in foreign air transportation.

(4) "Scheduled operations" means operations that are conducted in accordance with a published schedule for passenger operations which includes dates or times (or both) that is openly advertised or otherwise made readily available to the general public.

(5) "Size of aircraft" means an aircraft's size as determined by its seating configuration or payload capacity, or both.

(6) "Maximum payload capacity" means:

(i) For an aircraft for which a maximum zero fuel weight is prescribed in FAA technical specifications, the maximum zero fuel weight, less empty weight, less all justifiable aircraft equipment, and less the operating load (consisting of minimum flight crew, foods and beverages, and supplies and equipment related to foods and beverages, but not including disposable fuel or oil).

(ii) For all other aircraft, the maximum certificated takeoff weight of an aircraft, less the empty weight, less all justifiable aircraft equipment, and less the operating load (consisting of minimum fuel load, oil, and flightcrew). The allowance for the weight of the crew, oil, and fuel is as follows:

(A) Crew—200 pounds for each crewmember required by the Federal Aviation Regulations.]

(B) Oil—350 pounds.

(C) Fuel—the minimum weight of fuel required by the applicable Federal Aviation Regulations for a flight between domestic points 174 nautical miles apart under VFR weather conditions that does not involve extended overwater operations.

(7) "Empty weight" means the weight of the airframe, engines, propellers, rotors, and fixed equipment. Empty weight excludes the weight of the crew and payload, but includes the weight of all fixed ballast, unusable fuel supply, undrainable oil, total quantity of engine coolant, and total quantity of hydraulic fluid.

(8) "Maximum zero fuel weight" means the maximum permissible weight of an aircraft with no disposable fuel or oil. The zero fuel weight figure may be found in either the aircraft type certificate data sheet, or the approved Aircraft Flight Manual, or both.

(9) "Justifiable aircraft equipment" means any equipment necessary for the operation of the aircraft. It does not include equipment or ballast specifically installed, permanently or otherwise, for the purpose of altering the empty weight of an aircraft to meet the maximum payload capacity.

This Special Federal Aviation Regulation No. 38-2 terminates [June 1, 1989], or the effective date of the codification of SFAR 38-2 into the Federal Aviation Regulations, whichever occurs first.

Special Federal Aviation Regulation 41

Airworthiness Standards: Reciprocating and Turbopropeller-Powered Small Multiengine Airplanes—Increase in Approved Takeoff Weights and Passenger Seating Capacities

Adopted: September 7, 1979 Effective: October 17, 1979

(Published in 44 FR 53723, September 17, 1979)

SUMMARY: This amendment adopts a new Special Federal Aviation Regulation (SFAR) which prescribes additional airworthiness standards applicable to existing propeller driven multiengine small airplanes to allow their type and airworthiness recertification at weights in excess of the limitation of 12,500 pounds maximum certificated takeoff weight, or with an increase in the number of passenger seats, or both. The rules applicable to air taxi and commercial operators (Part 135) are amended to allow the operation of airplanes certificated under the SFAR. In addition, the operating rules (Parts 91 and 135) are amended to require that airplanes certificated under the SFAR at weights in excess of 12,500 pounds meet updated interior material flammability requirements within one year of initial airworthiness certification. These amendments are intended to allow the design capabilities of certain existing small airplanes to be more fully utilized. They are also designed to increase aircraft availability for the commuter market that is burgeoning since enactment of the Airline Deregulation Act of 1978.

FOR FURTHER INFORMATION CONTACT:

Raymond E. Ramakis, Safety Regulations Staff (AVS-24), Federal Aviation Administration, 800 Independence Avenue, S.W. Washington, D.C. 20591 Telephone (202) 755-8716.

* * * * *

ADOPTION OF THE AMENDMENT

Accordingly, the Federal Aviation Regulations (14 CFR Chapter I) are amended, effective October 17, 1979.

Secs. 313(a), 601, 603, and 604, Federal Aviation Act of 1958 (49 U.S.C. 1354(a), 1421, 1423, and 1424); Sec. 6(c) of the Department of Transportation Act (49 U.S.C. 1655(c)).

NOTE—The FAA has determined that this document involves a regulation which is not significant under Executive Order 12044, as implemented by DOT Regulatory Policies and Procedures (44 FR 11034; February 26, 1979). A copy of the final evaluation prepared for this action is contained in the regulatory docket. A copy of it may be obtained by writing to Raymond E. Ramakis, Safety Regulations Staff (AVS-24), Federal Aviation Administration, 800 Independence Avenue, S.W., Washington, D.C. 20591.

NOTE: The complete preamble to SFAR 41 is contained in Change 35 to Part 91 in Amendment 91-159.

Special Federal Aviation Regulation 41A

Increase in Approved Takeoff Weights and Passenger Seating Capacities: Correction

Adopted: April 7, 1980 **Effective: April 14, 1980**

(Published in 45 FR 25046, April 14, 1980)

SUMMARY: This action makes editorial corrections to Special Federal Aviation Regulation (SFAR) 41 adopted on September 7, 1979. The SFAR prescribes additional airworthiness requirements applicable to certain existing multiengine small airplanes to allow an increase in approved takeoff weights and passenger seating capacities.

FOR FURTHER INFORMATION CONTACT:

Eli S. Newberger, Safety Regulations Staff, AVS-24, Federal Aviation Administration, 800 Independence Ave., S.W., Washington, D.C. 20591, Telephone (202) 755-8716.

SUPPLEMENTARY INFORMATION:

This amendment of SFAR 41 (44 FR 53723, September 17, 1979) is editorial in nature to provide an omitted date, change an incorrectly stated date, and delete a regulatory reference listed in error.

As indicated in the preamble, SFAR 41 is applicable to existing propeller-driven multiengine small airplanes. The existing airplanes eligible for amended or supplemental type certificates are those type certificated prior to the effective date of the SFAR; i.e., October 17, 1979. This amendment provides the omitted date in paragraphs 1.(a) and 1.(b).

Paragraph 5.(b)(3) of the SFAR inadvertently cites the certification cutoff date of the given class of airplanes as July 1, 1970. Since this paragraph parallels § 135.169(b)(3), for consistency, the date is corrected to July 19, 1970.

Of the three sections of Appendix A, Part 135, referenced in paragraph 5.(c) of the SFAR, section 19.(b)(3) does not relate to landing requirements and was inadvertently included. Paragraph 5.(c) and the corresponding preamble discussion are amended by deleting the erroneous reference.

This amendment corrects the editorial errors as noted and good cause exists for making the amendment effective upon publication in the FEDERAL REGISTER [April 14, 1980].

ADOPTION OF AMENDMENT

Accordingly, the preamble of SFAR 41 and the text of SFAR 41 of the Federal Aviation Regulations (14 CFR SFAR 41) are amended, effective April 14, 1980.

[Secs. 313(a), 601, 603, and 604, Federal Aviation Act of 1958 (49 U.S.C. 1354(a), 1421, 1423, and 1424); Sec. 6(c), Department of Transportation Act (49 U.S.C. 1655(c)).]

NOTE: The FAA has determined that this document involves a regulation which is not significant under Executive Order 12044, as implemented by DOT Regulatory Policies and Procedures (44 FR 11034; February 26, 1979).

Special Federal Aviation Regulation 41B

Increase in Approved Takeoff Weights and Passenger Seating Capacities

Adopted: December 2, 1980 **Effective: December 8, 1980**

(Published in 45 FR 80972, December 8, 1980)

SUMMARY: This amendment specifies the additional requirements for airplane designs certificated under Special Federal Aviation Regulation No. 41 (SFAR 41) that are necessary to comply with the airworthiness standards of International Civil Aviation Organization (ICAO), Annex 8. Manufacturers or modifiers of these airplanes may voluntarily elect to comply with these additional requirements to facilitate international operations. SFAR 41 was issued on September 7, 1979, and amended on April 7, 1980, to clarify its applicability. SFAR 41 prescribes additional airworthiness standards applicable to existing propeller-driven multiengine small airplanes to allow their type and airworthiness certification at weights in excess of 12,500 pounds maximum certificated takeoff weight, or with an increase in the number of passenger seats, or both.

Comments must be received on or before March 9, 1981.

FOR FURTHER INFORMATION CONTACT:

Eli S. Newberger, Regulatory Projects Branch (AVS-24), Safety Regulations Staff, Associate Administrator for Aviation Standards, Federal Aviation Administration, 800 Independence Ave., S.W., Washington, D.C. 20591. Telephone (202) 755-8716.

ADDRESS: Comments on this amendment may be mailed in duplicate to: Federal Aviation Administration, Office of the Chief Counsel, Attn: Rules Docket (AGC-204), Docket No. 18315, 800 Independence Avenue, SW., Washington, D.C. 20591; or delivered in duplicate to: Room 916, 800 Independence Avenue, SW., Washington, D.C. 20591. All comments must be marked: Docket No. 18315. Comments may be inspected in the Rules Docket weekdays, except Federal holidays, between 8:30 a.m. and 5:00 p.m.

SUPPLEMENTARY INFORMATION:

Background

SFAR 41 was issued to provide for increased availability and utility of existing small multiengine propeller-driven airplanes in U.S. domestic commuter service by permitting type and airworthiness certification at weights above the limitation of 12,500 pounds maximum certificated takeoff weight. The SFAR permits an increase in the maximum certificated takeoff weight above 12,500 pounds, or an increase in passenger seating, or both, provided the maximum zero fuel weight does not exceed 12,500 pounds. Aircraft eligible for compliance with the SFAR must have been certificated to Federal Aviation Regulations Part 23 (FAR 23) prior to October 17, 1979, and an application for certification to SFAR 41 for the airplane must be filed prior to October 17, 1981. The production of airplanes certificated above 12,500 pounds, however, will be limited to 10 years after the effective date of SFAR 41, that is, until October 17, 1989.

No limitation has been established for the operational life of individual aircraft that were manufactured in conformance to a design approved under SFAR 41 prior to October 17, 1989.

Discussion

Certification under SFAR 41, as that regulation is presently worded, requires an endorsement on the airworthiness certificate to indicate that the airplane at weights in excess of 5,700 kg (12,566 pounds) does not meet ICAO Annex 8, "*International Standards, Airworthiness of Aircraft, to the Convention on International Civil Aviation.*" In the public rulemaking process followed before adoption of SFAR 41, technical differences were acknowledged to exist between SFAR 41 and ICAO Annex 8. After issuance of the SFAR, it was called to the FAA's attention that certain airplanes certificated to SFAR 41 could also be shown to comply with ICAO Annex 8. As written, however, SFAR 41 specifically requires all individual airworthiness certificates issued for aircraft type certificated under SFAR 41 to be specifically annotated otherwise. The purpose of this amendment is to eliminate this contradiction and allow those aircraft which do comply with ICAO Annex 8 to be free of statements to the contrary on their airworthiness certificates.

Article 33 of the Convention on International Civil Aviation (Chicago Convention) provides for the recognition of airworthiness certificates between contracting States when the airworthiness standards established by the Convention are met. The airworthiness standards established by the Convention are contained in ICAO Annex 8. Part III of ICAO Annex 8 sets forth objective standards applicable to airplanes of over 5,700 kg (12,566 pounds), maximum certificated takeoff weight intended for the carriage of passengers or cargo or mail in international air navigation. Noncompliance with these standards could seriously inhibit the international operations of affected airplanes.

The FAA, in the period since issuance of SFAR 41, has compared the airworthiness standards in Part III of ICAO Annex 8 with the airworthiness standards in FAR 23 plus SFAR 41. In this connection, the FAA has determined which specific FAR 25 airworthiness requirements must be met to ensure compliance with ICAO Annex 8, and they are listed in the body of the rule. It should be emphasized that the election to seek a more flexible international operations capability for airplanes already certificated to SFAR 41 by complying with these additional requirements is voluntary.

When an applicant elects to comply with the additional requirements of this amendment, the type certification basis statement on the type certificate data sheet or supplemental type certificate will indicate that the design meets the requirements of ICAO Annex 8. Aircraft covered under these certificates are excepted from the airworthiness certificate endorsement required by section 4(b) of SFAR 41. Applications for certification under SFAR 41 must be on file before October 17, 1981. However, applications for certification under the additional standards contained in this amendment may be made at any time for aircraft already certificated to SFAR 41. Since the additional standards of this amendment reflect specific standards of FAR 25 which may change after this amendment, the standards cited are those in effect on October 17, 1979, the effective date of SFAR 41.

Request For Comments

Interested persons are invited to submit comments on only this amendment. Communications should identify the docket number and be submitted in duplicate to the address specified above. All communications received on or before the closing date for comments will be considered by the Administrator. This amendment may be changed in the light of the comments received. All comments received will be available, both before and after the closing date for comments, in the Rules Docket for examination by interested persons.

Notice and Public Procedure

The FAA recognizes that although the objective of SFAR 41 was met to increase the utilization of certain FAR 23 aircraft in U.S. domestic commuter service, difficulties may be encountered with the operation of such aircraft in foreign countries to the extent that the FAA precludes these aircraft from meeting the standard of ICAO Annex 8. In view of this, the FAA has determined those standards that will permit the voluntary compliance by persons seeking to undertake international operations with airplanes certificated under SFAR 41. Since this action is necessary to avoid imposing an undue burden on the international operations of these airplanes and since the FAA had no intention to preclude voluntary compliance with ICAO Annex 8 when SFAR 41 was issued, I find that notice and public procedure are impractical and contrary to the public interest and that good cause exists for making this amendment effective in less than 30 days. Accordingly, this amendment is effective on the date it is published in the *Federal Register* (45 FR 80972, 12/8/80).

ADOPTION OF AMENDMENT

In consideration of the foregoing, SFAR 41 of the Federal Aviation Regulations [14 CFR SFAR 41] is amended effective December 8, 1980.

[Sec. 313(a), 601, 603, 604, Federal Aviation Act of 1958 (49 U.S.C. 1354(a), 1421, 1423, 1424); Sec. 6(c), Department of Transportation Act (49 U.S.C. 1655(c))]

NOTE: The FAA has determined that this document involves an amendment which is not considered to be significant under the procedures and criteria prescribed by Executive Order 12044 as implemented by Department of Transportation Policies and Regulatory Procedures (44 FR 11034; February 26, 1979). A copy of the final evaluation prepared for this action is contained in the regulatory docket. A copy of it may be obtained by contacting the person identified above under the caption "FOR FURTHER INFORMATION CONTACT".

This rule is a final order of the Administrator as defined by Section 1005 of the Federal Aviation Act of 1958, as amended (49 U.S.C. 1485). As such, it is subject to review only by the courts of appeals of the United States or the United States Court of Appeals for the District of Columbia.

Special Federal Aviation Regulation 41C

Airworthiness Standards: Reciprocating and Turbopropeller-Powered Small Multiengine Airplanes: SFAR 41 Interim Standards

Adopted: July 21, 1982 **Effective: September 13, 1982**

(Published in 47 FR 35150, August 12, 1982)

SUMMARY: This amendment reinstates and extends the effectivity of Special Federal Aviation Regulation (SFAR) 41 which expired October 17, 1981, and amends the SFAR to: (1) Eliminate the 12,500-pound maximum zero fuel weight (MZFW) restriction; (2) limit the number of passenger seats to 19 for those small propeller-driven multiengine airplanes that operate at a certificated gross takeoff weight in excess of 12,500 pounds; and (3) relax the landing distance determination requirement, making it consistent with Parts 23 and 25. This amendment results from a number of petitions for exemption and rulemaking submitted to the FAA and provides economic benefits to commuter airlines by improving operating efficiency without compromising safety. This amendment does not address the possible codification of SFAR 41 into Part 23 as mentioned in Notice 82-3.

FOR FURTHER INFORMATION CONTACT:

Joseph Snitkoff, Certification Procedures and Standards Branch (AWS-130), Aircraft Engineering Division, Office of Airworthiness, Federal Aviation Administration, 800 Independence Ave., S.W., Washington, D.C. 20591, Telephone (202) 426-8395.

SUPPLEMENTARY INFORMATION:

Background

A longstanding limitation, which distinguishes between large and small airplanes, requires all new type certificated airplanes with a maximum certificated takeoff weight of more than 12,500 pounds to meet the transport category airworthiness standards of Part 25 of the Federal Aviation Regulations, regardless of the type of operation or number of passenger seats. At the time this limitation was established in the regulations, there were a few small airplanes with maximum weights near 12,500 pounds. The International Civil Aviation Organization (ICAO) standards make a similar distinction.

SFAR 41 was adopted as an interim standard to permit limited growth and utilization of existing small propeller-driven multiengine airplanes that had demonstrated, through service experience, a satisfactory level of safety. These airplanes were made available to the emerging commuter airline industry consistent with the Airline Deregulation Act of 1978, without compromising the high safety standards in air transportation. SFAR 41 was designed to fill the gap between Part 23 and Part 25 certification standards until commuter airplanes could be developed and certificated to a set of standards more appropriate to their size and type of operation.

SFAR 41 prescribes additional airworthiness standards applicable to existing small propeller-driven multiengine airplanes. It allows, in part, type and airworthiness recertification of these airplanes at weights in excess of 12,500 pounds maximum certificated takeoff weight and with an increase in the number of passenger seats. A design restriction is imposed which limits the maximum zero fuel weight to 12,500 pounds.

The regulation was amended April 14, 1980 (SFAR 41A; 45 FR 25046), for clarification and to make editorial changes. It was further amended December 8, 1980 (SFAR 41B; 45 FR 80972), to specify additional requirements needed to comply with ICAO Annex 8 airworthiness standards. SFAR 41B expired October 17, 1981.

Notice of Proposed Rulemaking (NPRM) 82-3 to reinstate and amend SFAR 41 was published in the *Federal Register* on March 4, 1982 (47 FR 9360). The comment period closed on April 20, 1982. Comments received after the closing date were also considered in accordance with § 11.47(a).

Discussion of Comments

Twenty sets of comments were received concerning Notice 82-3 from many segments of the aviation community. Views of airplane manufacturers, owners, operators, pilots, foreign airplane manufacturers, foreign aviation authorities, and the flying public were received in response to the notice. In addition to the comments on Notice 82-3, one commenter's response to the related petition concerning landing distance determination also is disposed of in this change to SFAR 41.

Reinstatement of SFAR 41

Two commenters oppose reinstating SFAR 41. They maintain that SFAR 41, by virtue of its status as an interim standard, is deficient in many respects to Part 25 and therefore does not provide an equivalent level of safety to Part 25. They point out that SFAR 41 has lower performance standards and lacks comparable emergency evacuation, systems and equipment reliability and integrity, and fire protection requirements.

Regarding the contention that SFAR 41 is deficient compared to Part 25, the FAA wishes to point out that SFAR 41 was never intended as an equivalent to or a replacement for Part 25 with identical requirements. Rather, SFAR 41 was promulgated to enable greater utilization of existing Part 23 type airplanes for commuter operations when those airplanes are certificated to the higher standards of SFAR 41 even though they may not meet transport category certification requirements. The SFAR 41 standards incorporated additional airworthiness, crashworthiness, and airplane performance requirements designed to provide the necessary level of safety for a type of airplane that heretofore had not had such requirements specifically developed for it. Airplanes certificated under SFAR 41 have a good safety record. Extending the applicability of SFAR 41 for a limited period of time will benefit the commuter airplane industry and the flying public by improving service and operating efficiency with no derogation of safety. SFAR 41 was and will continue to be applicable only to small propeller-driven multiengine airplanes certificated before October 17, 1979, with a satisfactory service history at the time of application. This applicability date is not changed by this final rule; therefore, the proposal to reinstate the effectivity of SFAR 41 is adopted without substantive change.

Removal of the Maximum Zero Fuel Weight (MZFW) Restriction

Thirteen commenters support and one opposes removing the MZFW restriction. The opposing commenter proposes that instead of this, a maximum takeoff weight or a new MZFW limitation be established to control the large increases in weights for aircraft used in combined commuter/cargo operations which he predicts could result from removing the restriction. Such large weight increases, however, could not occur since there is a regulatory constraint on maximum payload of 7,500 pounds for commuter operations under Part 135 which, together with the 19-passenger limitation, effectively maintains aircraft weights at reasonable levels. Supporters of the proposal claim that removing the MZFW restriction is in the public interest as it increases the commuter airlines' profit potential and reduces operating costs without any adverse effect on safety. They assert that the MZFW is only a design consideration and should not be a limitation. Further, removing the restriction would permit the use of improved avionics equipment which, even though adding to the aircraft weight, would still result in economic benefits because of the greater payload allowed. Therefore, the proposal to eliminate the MZFW restriction is adopted without substantive change.

19-Passenger Limit

SFAR 41 through Amendment 41B contained no limitation on the number of passengers, but imposed a MZFW restriction of 12,500 pounds. Notice 82-3 made clear that, as a condition for eliminating the MZFW restriction, a specified passenger limit would be prescribed to preclude escalation of airplane size to the point where Part 25 standards would apply. As explained, a 19-passenger configuration was selected as the logical and economic limit to avoid the burden that would be imposed by flight attendant and possible other requirements for additional passengers. Eight commenters support the 19-passenger limitation and six commenters oppose it on the basis that a greater number be allowed. Those opposed believe that passenger capacities above 19 should be permitted as long as the airplane meets all applicable regulations, the safety level is not lowered, and there are some economic benefits to be gained. They point out that SFAR 41 to date does not contain constraints on the number of passengers except to define minimum aisle widths for 10 to 23 passengers and configurations with over 23 passengers, and specifies additional airworthiness standards for 16 to 23 passengers. Therefore, since SFAR 41 permitted applicants to request certification for more than 19 passengers, it is argued that the proposed limitation becomes arbitrarily restrictive in not allowing other manufacturers the same opportunity. Advocates of a higher passenger limitation also agree that the proposed limitation is artificial, that the additional emergency equipment that would be required is minimal, and that the number of emergency exits required for 16 to 23 passengers is the same. Three commenters support a 23-passenger limitation. None of these commenters, however, discuss the passenger limitation in the context of tradeoff for eliminating the MZFW.

When SFAR 41 was originally developed, both the FAA and the public involved in the rulemaking agreed that some constraint should be imposed to limit the number and size of airplanes designed to SFAR 41 standards. The "number" aspect was addressed by making SFAR 41 applicable only to airplanes type certificated before October 17, 1979. To limit the size, both an MZFW and passenger limit were discussed. At that time it was deemed most appropriate to utilize the MZFW as the means for controlling size. In today's economic environment, however, it is realized that this limit may impose undue hardship on SFAR 41 airplane operators and may even impede installing improved equipment. As recognized by some commenters, the FAA must now establish some other limiting criteria to prevent escalating SFAR 41 small airplanes into larger, pseudotransport-category types, and the 19-passenger limitation can effectively serve this purpose. Accordingly, the 19-passenger limitation is adopted without substantive change.

The FAA has reviewed all aircraft certificated (and existing applications for certification) under SFAR 41 and has found that all these airplanes involve no more than 19 passengers. Thus, imposing the 19-passenger limit will not adversely affect any existing application. Limiting the passenger configuration does not contradict the provisions of the Airline Deregulation Act in that it provides economic benefits for existing commuter and cargo operations without degrading safety.

Two commenters state that, if the 19-passenger limitation is adopted, reference to passengers in excess of 19 in the table of paragraph 5(e) (*k*) under *Doors and Exits* should be deleted. The FAA agrees and the table is amended to reflect the maximum passenger seating configuration of 19. Other changes proposed in Notice 82-3, consistent with the elimination of the MZFW restriction and adoption of the 19-passenger-seat configuration (proposals numbered 3, 4, 6, and 7), are adopted without change. No substantive comments beyond those previously discussed were made on these proposals.

Landing Distance Determination

Proposal 5 addresses the landing distance determination of SFAR 41 airplanes. It proposes to amend paragraph 5(c) (*a*) to relax the landing distance determination requirement to make it consistent with current Parts 23 and 25. In addition to comments expressing overall concurrence with Notice 82-3, six commenters specifically support the proposed change to paragraph 5(c) (*a*). Additionally, one of these commenters suggests two changes to Appendix A of Part 135. One change pertains to paragraph 6(a) (2) of Appendix A of Part 135 and would separate the go-around and landing cases or completely eliminate the $1.05V_{MC}$ requirement. The other change would realign paragraph 7(b) of Appendix A of Part 135 to relax the landing distance determination requirement in a manner similar to that proposed for SFAR 41, paragraph 5(c) (*a*). Neither of the changes suggested by the commenter are addressed at this time as revising Part 135 is beyond the scope of this rulemaking action.

However, the FAA does recognize that all applicants eligible for an amended or supplemental type certificate under SFAR 41 should be entitled to the benefits of the relaxed landing distance determination requirement proposed for paragraph 5(c)(*a*). Therefore, in addition to amending paragraph 5(c)(*a*) as proposed, which relaxes the requirement for aircraft certified under paragraph 1(b) of SFAR 41, identical relief is granted for aircraft certificated under paragraph 1(a) of SFAR 41 by amending paragraph 1(a)(2) to allow the $1.3V_{s1}$ gliding approach of the present § 23.75(a) or an alternative steady approach of a specified gradient.

One commenter disagrees with the proposal to relax the landing distance determination requirement of paragraph 5(c)(*a*) by allowing landing distances to be determined in accordance with § 23.75. The commenter cites the proliferation of operations under Part 135 with SFAR 41 airplanes and notes the importance and advantages of requiring the same high level of safety as provided under Part 121. The commenter cites the added safety factors in Part 121 of 1.67 and 1.43 for landing distances at destination and alternate airports, respectively.

The FAA agrees with the commenter's assertion with regard to the level of safety in landing distance determination for Parts 135 and 121 aircraft. This is exemplified by the fact that the 1.67 and 1.43 safety factors are required in both Parts 135 and 121. With the continued applicability of these identical landing safety factors and approach techniques, the same high level of safety will be maintained for landing distance determination with both SFAR 41/Part 135 and transport category/Part 121 airplanes.

By implementing the proposed change to SFAR 41, the landing distance would be determined using either a $1.3V_{s1}$ power approach or a $1.3V_{s1}$ gliding approach as specified currently in both §§ 23.75 and 25.125. If paragraph (*a*) under Section 5(c) of SFAR 41 remains unchanged, longer (and thus more conservative) landing distances would be specified for an airplane certificated under SFAR 41 than if that airplane were certificated under the existing Part 23 or Part 25. There is no justifiable reason for this inequity to exist. Because landing distances determined under SFAR 41 were overly conservative and since the landing safety factors are identical in Parts 135 and 121, the FAA cannot support the commenter's position. Therefore, the change to paragraph (*a*) under Section 5(c) is adopted as proposed and paragraph 1(a)(2) is similarly revised for consistency.

Miscellaneous Comments

Notice 82-3 proposed to extend the pre-existing production cutoff date by 2 years. Five commenters express support of the extension and cite the reasons given in the NPRM. One commenter misunderstood the proposal, believing the extension of the cutoff date to be only 1 year, and states that it should be related to the effective date of the amendment. The proposal to extend the production cutoff date from 1989 to 1991 is adopted without substantive change.

Proposal 8 extends the expiration date of SFAR 41C to 1 year after the effective date of this amendment. Five commenters specifically support this proposal and one commenter suggests that the expiration date be extended to 2 years. The FAA believes that 1 year affords sufficient time for manufacturers to apply for certification of their existing models with the MZFW restriction removed. Proposal 8 is adopted without substantive change.

One commenter proposes to delete the date "October 17, 1979" from paragraph 1(a) and 1(b) of SFAR 41 and to insert in its place "the effective date of this amendment." He states that under the proposed rule, an applicant having designed an airplane of this class after October 17, 1979, would be required to certify its airplane under Part 25 and would not be permitted certification under SFAR 41. The commenter feels it would be arbitrarily restrictive not to permit an applicant the opportunity to certify its airplane to SFAR 41 standards. The FAA considers this suggested change to be outside the scope of this rulemaking action.

Comments on Codification of SFAR 41 into Part 23

Notice 82-3 invited comments on the advisability of codifying the substance of SFAR 41B and the proposed SFAR 41C into Part 23 and to extend its applicability to new multiengine airplanes having a maximum takeoff gross weight greater than 12,500 pounds with 19 passenger seats. By its request, the FAA merely wished to accept preliminary comments on the advisability of changing Part 23, with the intent that any definite proposals would be included in future notices. Many interesting views and comments received on this issue are included in the docket file. In general, there is great interest in providing a viable regulation applicable to the certification of commuter airplanes. The FAA realizes that this issue needs careful study and review by all concerned, and it will be addressed in a separate notice.

Economic Impact and Benefits

Eliminating the MZFW restriction will have no adverse safety impact and may, in fact, improve safety because operators will be encouraged to add additional or improved avionics equipment. Aircraft operators will now be able to add more passenger seats, up to 19, increase baggage allowances, provide improved passenger amenities, and increase cargo capacity. Because the marginal cost of carrying the additional payload would be relatively low compared to the additional revenue for such carriage, the added utility of this payload increase could be significant.

A commuter carrier estimates that the proposed rule would permit an additional 1,500 pounds of cargo in its aircraft. At a cargo yield of 40 cents per pound, the carrier has the potential to increase its revenue by $936,000 per year. In addition, the carrier points out that there have been instances where it had been forced to refuse a shipment because of its weight. It also could increase the number of its passengers from 16 to 19 on one of its route segments.

It has been determined that the proposal to allow the use of shorter runways will not have an adverse impact upon safety. Economic benefits include the increased availability of air transportation to small cities that might otherwise be denied service because of short runways. For example, for a certain airplane the landing distance could be reduced from 5,171 feet to 4,100 feet. While difficult to measure in dollar terms, the benefits would be substantial, and because there would be no adverse impact on safety, the regulatory change will be in the public interest.

The airplane manufacturer will face some moderate costs in recertifying the airplane to the proposed new weight and landing distance criteria. An airplane manufacturer who does not wish to establish revised weight or landing distance limitations will not incur these costs.

Summary of Final Regulatory Flexibility Analysis

The Regulatory Flexibility Act requires an analysis of alternatives if a proposal has a significant economic impact on a substantial number of small entities.

The amendment to eliminate the MZFW restriction will have a significant positive impact on a substantial number of entities. The amendment is relaxatory in nature and a manufacturer may choose either to seek the benefits of the proposal or maintain the status quo. No further easing of the MZFW restriction is possible; therefore, there are no other alternatives to consider.

The amendment relating to the minimum landing distance determination will have a significant economic impact on a substantial number of small entities. There are no other relaxatory alternatives consistent with safety. Thus landing distance determination is needed to be consistent with longstanding §§ 23.75 and 25.125, the requirements of which have been proven by service experience and for which there is no safety basis to consider further relaxation.

If increasing the proposed 19-passenger limitation (for example, to 23 passengers) would improve the economic utility of a qualifying airplane as some commenters contend, this would not impact a substantial number of small entities and, therefore, need not be analyzed. The agency believes that without an MZFW restriction, there must be a passenger limitation to prevent these SFAR 41 airplanes which do not meet Part 25 standards from an uncontrolled increase in size. It is the FAA's judgment that airplanes carrying more than 19 passengers require different standards. The FAA will review Parts 23 and 25 as applicable to new commuter type airplanes and will give careful consideration to the issue of a passenger limitation.

The final Regulatory Flexibility Analysis and Regulatory Flexibility Determination are combined with the Regulatory Evaluation in the docket.

ADOPTION OF AMENDMENT

Accordingly Special Federal Aviation Regulation 41 (14 CFR Parts 21, 23, 36, 91, 121, 135, and 139) is amended effective September 13, 1982.

(Sec. 313(a), 601, 603, and 604 of the Federal Aviation Act of 1958 (49 U.S.C. 1354(a), 1421, 1423, 1424); Sec. 6(c), Department of Transportation Act (49 U.S.C. 1655(c)).)

NOTE: This amendment will allow manufacturers and operators of certain existing airplanes the option of complying with relaxed requirements that will increase payloads and improve air carrier services to the public. The FAA has determined that it involves a regulation which is not a major rule under Executive Order 12291 and is not a significant rule under the Department of Transportation Regulatory Policies and Procedures (44 FR 11034; February 26, 1979). A regulatory evaluation, including a final regulatory flexibility analysis, has been placed in the public docket. A copy of it may be obtained from the person identified under "FOR FURTHER INFORMATION CONTACT."

Special Federal Aviation Regulation 41

1. *Applicability.* (a) Contrary provisions of Parts 21 and 23 of the Federal Aviation Regulations notwithstanding, an applicant is entitled to an amended or supplemental type certificate in the normal category for a reciprocating or turbopropeller-powered multiengine small airplane originally type certificated prior to October 17, 1979, in accordance with Part 23 of the Federal Aviation Regulations in effect on March 31, 1971, or later, that is to be certificated with a passenger seating configuration, excluding pilot seats, of 10 seats or more (but not more than 19 seats) at a maximum certificated takeoff weight of 12,500 pounds or less, if the applicant complies with—

(1) The regulations incorporated in the type certificate; and

(2) The requirements of Appendix A of Part 135 of the Federal Aviation Regulations in effect on September 26, 1978, except that the landing distance must be determined for standard atmosphere at each weight, altitude, and wind within the operating limits established by the applicant in accordance with § 23.75(a) of this chapter in effect on September 26, 1978. Instead of a gliding approach specified in § 23.75(a), the landing may be preceded by a steady approach down to the 50-foot height at a gradient of descent not greater than 5.2 percent (3°) at a calibrated airspeed not less than $1.3V_{s1}$.

(b) Contrary provisions of Parts 1, 21, 23, 91, 121, and 135 of the Federal Aviation Regulations notwithstanding, an applicant is entitled to an amended or supplemental type certificate in the normal category for a reciprocating or turbopropeller powered multiengine airplane originally type certificated prior to October 17, 1979, that is to be certificated with a maximum takeoff weight in excess of 12,500 pounds, a specified maximum zero fuel weight to be established by the applicant, and, where requested by the applicant, an increase in passenger seating configuration, (but not more than 19 passenger seats) if the applicant complies with—

(1) The regulations incorporated in the type certificate;

(2) The requirements of Appendix A of Part 135 of the Federal Aviation Regulations in effect on September 26, 1978 with the exceptions specified in section 5 of this Special Federal Aviation Regulation; and

(3) The additional requirements specified in sections 7 through 14 of this Special Federal Aviation Regulation applicable to takeoff weights in excess of 12,500 pounds.

(c) Contrary provisions of Part 1 of the Federal Aviation Regulations notwithstanding, an airplane certificated under paragraph (b) of this section is considered to be a small airplane for purposes of Parts 21, 23, 36, 121, 135, and 139 of the Federal Aviation Regulations and a large airplane for purposes of Parts 61 and 91. Compliance with the small airplane provisions of Part 36 of the Federal Aviation Regulations must be shown at the maximum certificated takeoff weight approved under this Special Federal Aviation Regulation.

2. *Eligibility.* Any person may apply for a supplemental type certificate (or an amended type certificate in the case of a type certificate holder) under this Special Federal Aviation Regulation.

3. *Production limitation.* An amended or supplemental type certificate issued pursuant to section 1.(b) of this Special Federal Aviation Regulation is effective for the purpose of obtaining an original or an amended airworthiness

certificate, until October 17, 1991, unless the type certificate is sooner surrendered, suspended, revoked, or terminated.

4. *Restrictions.* For airplanes under section 1.(b) of this Special Federal Aviation Regulation—

(a) The maximum zero fuel weight of the airplane must be established as an operating limitation; and

(b) Except as provided in paragraph (c) of this section, the airworthiness certificate shall be endorsed "This airplane at weights in excess of 5,700 kg does not meet the airworthiness requirements of ICAO, as prescribed by Annex 8 of the Convention on International Civil Aviation."

(c) An applicant is entitled to type certificate amendment or a supplemental type certificate that shows compliance with ICAO Annex 8 if the airplane meets SFAR 41 and the following requirements prescribed by the Administrator in effect on October 17, 1979:

(1) At each weight, altitude, and temperature within the operational limits selected by the applicant—

(i) For approach climb performance, comply with §§ 25.121(d) and 25.1533(a) (2).

(ii) For takeoff performance, comply with §§ 25.105(d), 25.111, 25.113(a), and 25.115.

(2) For gust loads design at rough air gust speed V_B, comply with §§ 25.335(d), 25.341(a) (1), and 25.351(b).

(3) For smoke evacuation design, comply with § 25.831(d).

(4) For engine rotation and restarting design, comply with §§ 25.903(c) and (e).

(5) For engine cooling design, comply with § 25.1521(e).

5. *Exceptions.* For purposes of obtaining an amended or supplemental type certificate under section 1.(b) of this Special Federal Aviation Regulation, the following exceptions apply. All references in this section to specific sections of Parts 23 and 25 of this chapter are to those in effect on September 26, 1978 if no other date is given:

(a) Compliance with section 1 of Appendix A of Part 135 of the Federal Aviation Regulations is not required.

(b) Compliance may be shown with the applicable regulations incorporated in the type certificate in lieu of the requirements of Appendix A of Part 135 of the Federal Aviation Regulations for takeoff weights of 12,500 pounds or less, if the airplane was type certificated—

(1) Under FAR Part 23 in effect prior to Amendment 23-10 and the airplane is to be used only in FAR Part 91 operations;

(2) Before July 1, 1970, in the normal category with a passenger seating configuration, excluding any pilot seat, of 10 seats or more, (but not to exceed 19 passenger seats) and meets special conditions issued by the Administrator for airplanes intended for use in operations under FAR Part 135; or

(3) Before July 19, 1970, in the normal category with a passenger seating configuration, excluding any pilot seat, of 10 seats or more, (but not to exceed 19 passenger seats) and meets the additional airworthiness standards in Special Federal Aviation Regulation No. 23.

(c) In lieu of compliance with sections 7., and 19.(c) of Appendix A of Part 135 of the Federal Aviation Regulations, comply with the following at takeoff weights in excess of 12,500 pounds:

Landing.

(a) The landing distance must be determined for standard atmosphere at each weight, altitude, and wind within the operational limits established by the applicant in accordance with § 23.75(a) of this chapter. Instead of a gliding approach specified in § 23.75(a), the landing may be preceded by a steady approach down to the 50-foot height at a gradient of descent not greater than 5.2 percent (3^0) at a calibrated airspeed not less than 1.3 $V_{S1.}$

(b) The landing distance data must include correction factors for not more than 50 percent of the nominal wind components along the landing path opposite to the direction of landing, and not less than 150 percent of the nominal wind components along the landing path in the direction of landing.

(d) In lieu of compliance with Section 28 of Appendix A of Part 135 of the Federal Aviation Regulations, comply with the following:

Fatigue evaluation of flight structure. Unless it is shown that the structure, operating stress levels, materials, and expected use are comparable from a fatigue standpoint to similar design which has had substantial satisfactory service experience, the strength, detail design, and the fabrication of those parts of the wing, wing carrythrough, vertical fin, horizontal stabilizer, and attaching structure whose failure would be catastropic must be evaluated under either—

(a) A fatigue strength investigation in which the structure is shown by analysis, tests, or both, to be able to withstand the replaced loads of variable magnitude expected in service. Analysis alone is acceptable only when it is conservative and applied to simple structures; or

(b) A fail-safe strength investigation in which it is shown by analysis, tests, or both, that catastrophic failure of the structure is not probable after fatigue, or obvious partial failure, of a principal structural element, and that the remaining structure is able to withstand a static ultimate load factor of 75 percent of the critical limit load factor at V_c. These loads must be multiplied by a factor of 1.15 unless the dynamic effects of failure under static load are otherwise considered.

(e) In lieu of compliance with section 32 of Appendix A of Part 135 of the Federal Aviation Regulations, comply with the following:

Doors and exits. The airplane must meet the requirements of §§ 23.783 and 23.807(a)(3), (b), and (c) of this chapter, and in addition the following requirements:

(a) Each cabin must have at least one easily accessible external door.

(b) There must be a means to lock and safeguard each external door against opening in flight (either inadvertently by persons or as a result of mechanical failure or failure of a single structural

element). Each external door must be operable from both the inside and the outside, even though persons may be crowded against the door on the inside of the airplane. Inward opening doors may be used if there are means to prevent occupants from crowding against the door to an extent that would interfere with the opening of the door. The means of opening must be simple and obvious and must be arranged and marked so that it can be readily located and operated, even in darkness. Auxiliary locking devices may be used.

(*c*) Each external door must be reasonably free from jamming as a result of fuselage deformation in a minor crash.

(*d*) Each external door must be located where persons using it will not be endangered by the propellers when appropriate operating procedures are used.

(*e*) There must be a provision for direct visual inspection of the locking mechanism by crewmembers to determine whether external doors, for which the initial opening movement is outward (including passenger, crew, service, and cargo doors), are fully locked. In addition, there must be a visual means to signal to appropriate crewmembers when normally used external doors are closed and fully locked.

(*f*) Cargo and service doors not suitable for use as exits in an emergency need only meet paragraph (*e*) of section 5(e) of this regulation and be safeguarded against opening in flight as a result of mechanical failure or failure of a single structural element.

(*g*) The passenger entrance door must qualify as a floor level emergency exit. If an integral stair is installed at such a passenger entry door, the stair must be designed so that when subjected to the inertia forces specified in § 23.561 of this chapter, and following the collapse of one or more legs of the landing gear, it will not interfere to an extent that will reduce the effectiveness of emergency egress through the passenger entry door. Each additional required emergency exit except floor level exits must be located over the wing or must be provided with acceptable means to assist the occupants in descending to the ground. In addition to the passenger entrance door—

(*1*) For a total passenger seating capacity of 15 or less, an emergency exit, as defined in § 23.807(b) of this chapter, is required on each side of the cabin; and

(*2*) For a total passenger seating capacity of 16 through 19, three emergency exits, as defined in § 23.807(b) of this chapter, are required with one on the same side as the door and two on the side opposite the door.

(*h*) An evacuation demonstration must be conducted utilizing the maximum number of occupants for which certification is desired. It must be conducted under simulated night conditions utilizing only the emergency exits on the most critical side of the aircraft. The participants must be representative of average airline passengers with no prior practice or rehearsal for the demonstration. Evacuation must be completed within 90 seconds.

(*i*) Each emergency exit must be marked with the word "Exit" by a sign which has white letters 1 inch high on a red background 2 inches high, be self-illuminated or independently internally electrically illuminated, and have a minimum luminescence (brightness) of at least 160 microlamberts. The colors may be reversed if the passenger compartment illumination is essentially the same.

(*j*) Access to window type emergency exits may not be obstructed by seats or seat backs.

(*k*) The width of the main passenger aisle at any point between seats must equal or exceed the values in the following table:

Number of passenger seats	*Minimum main passenger* aisle width	
	Less than 25 inches from floor	25 inches and more from floor
10 through 19	9 inches	15 inches.

(f) In lieu of compliance with Section 45 of Appendix A of Part 135 of the Federal Aviation Regulations, comply with § 23.954 of this chapter.

(g) In lieu of compliance with Section 56 of Appendix A of Part 135 of the Federal Aviation Regulations, comply with the following:

Cowlings. The airplane must be designed and constructed so that no fire originating in any engine compartment can enter, either through openings or by burn through), any other region where it would create additional hazards.

(h) In lieu of compliance with Section 57 of Appendix A of Part 135 of the Federal Aviation Regulations, comply with § 25.863 of this chapter.

6. *Additional requirements—general.* The additional requirements specified in sections 7 through 14 apply to the certification of airplanes pursuant to section 1.(b) of this Special Federal Aviation Regulation.

7. *Compartment interiors.* (a) If smoking is to be prohibited, there must be a placard so stating, and if smoking is to be allowed—

(1) There must be an adquate number of self-contained removable ashtrays; and

(2) Where the crew compartment is separated from the passenger compartment, there must be at least one sign (using either letters or symbols) notifying all passengers when smoking is prohibited. Signs which notify when smoking is prohibited must—

(i) Be legible to each passenger seated in the passenger cabin under all probable lighting conditions; and

(ii) When illuminated, be so constructed that the crew can turn them on and off.

(b) Each disposal receptacle for towels, paper, or waste must be fully enclosed and constructed of at least fire resistant materials, and must contain fires likely to occur in it under normal use. The ability of the disposal receptacle to contain those fires under all probable conditions of wear, misalignment, and ventilation expected in service must be demonstrated by test. A placard containing the legible words "No Cigarette Disposal" must be located on or near each disposal receptacle door.

(c) Lavatories must have "No Smoking" or "No Smoking in Lavatory" placards located conspicuously on each side of the entry door, and self-contained removable ashtrays located conspicuously on or near the entry side of each lavatory door, except that one ashtray may serve more than one lavatory door if it can be seen from the cabin side of each lavatory door served. The placards must have red letters at least one-half inch high on a white background at least one inch high. (A "No smoking" symbol may be included on the placard).

(d) There must be at least one hand fire extinguisher conveniently located in the pilot compartment.

(e) There must be at least one hand fire extinguisher conveniently located in the passenger compartment.

8. *Landing gear.* Comply with §§ 25.721(a)(2), (b), and (c) of this chapter in effect on September 26, 1978.

9. *Fuel system components crashworthiness.* Comply with §§ 25.963(d) and 25.994 of this chapter in effect on September 26, 1978.

10. *Shutoff means.* Comply with § 23.1189 of this chapter in effect on September 26, 1978.

11. *Fire detector and extinguishing systems.*

(a) *Fire detector systems.*

(1) There must be a means which ensures the prompt detection of a fire in an engine compartment.

(2) Each fire detector must be constructed and installed to withstand the vibration, inertia, and other loads to which it may be subjected in operation.

(3) No fire detector may be affected by any oil, water, other fluids, or fumes that might be present.

(4) There must be means to allow the crew to check, in flight, the function of each fire detector electric circuit.

(5) Wiring and other components of each fire detector system in an engine compartment must be at least fire resistant.

(b) *Fire extinguishing systems.*

(1) Except for combustor, turbine, and tail pipe sections of turbine engine installations that contain lines or components carrying flammable fluids or gases for which it is shown that a fire originating in these sections can be controlled, there must be a fire extinguisher system serving each engine compartment.

(2) The fire extinguishing system, the quantity of the extinguishing agent, the rate of discharge, and the discharge distribution must be adequate to extinguish fires. An individual "one shot" system may be used.

(3) The fire-extinguishing system for a nacelle must be able to simultaneously protect each compartment of the nacelle for which protection is provided.

12. *Fire extinguishing agents.* Comply with § 25.1197 of this chapter in effect on September 26, 1978.

13. *Extinguishing agent containers.* Comply with § 25.1199 of this chapter in effect on September 26, 1978.

14. *Fire extinguishing system materials.* Comply with § 25.1201 of this chapter in effect on September 26, 1978.

Expiration. This Special Federal Aviation Regulation terminates on September 13, 1983, unless sooner rescinded or superseded.

Special Federal Aviation Regulation 50

Special Flight Rules in the Vicinity of the Grand Canyon National Park

Adopted: March 23, 1987 **Effective: April 27, 1987**

(Published in 52 FR 9768, March 26, 1987)

SUMMARY: This Special Federal Aviation Regulation (SFAR) establishes temporary procedures for the operation of all aircraft in the airspace above the Grand Canyon up to an altitude of 9,000 feet above mean sea level (MSL). In recent years, the high volume of air traffic over the park has increased the risk of midair collision. The overflights also generated noise impacts on park surface areas to a degree which may be inconsistent with Federal policies for operation of the Park. The restrictions adopted will: (1) establish a Special Flight Rules Area from the surface to 9,000 feet MSL in the area of the Grand Canyon; (2) prohibit flights in this area unless specifically authorized by the local FAA Flight Standards District Office; and (3) establish certain terrain avoidance and communications requirements for flights in the area. The temporary rules adopted will reduce the risk of midair collision, will reduce the risk of terrain contact accidents below the rim level, and will reduce the impact of aircraft noise on the park environment.

DATES: *Effective date:* April 27, 1987

Comment date: Comments must be received on or before April 15, 1987.

Expiration date: Special Federal Aviation Regulation No. 50 expires on June 15, 1987.

ADDRESSES: Comments on the proposed permanent rule regulation may be mailed in duplicate to:

Federal Aviation Administration, Office of the Chief Counsel, Attention: Rules Docket (AGC-204),
Docket No. 25149, 800 Independence Avenue, S.W., Washington, D.C. 20591

or delivered in duplicate to:

FAA Rules Docket, Room 916, 800 Independence Avenue, S.W., Washington, D.C.

Comments may be examined in the Rules Docket weekdays, except Federal holidays, between 8:30 a.m. and 5:00 p.m.

FOR FURTHER INFORMATION CONTACT:

David L. Bennett, Office of the Chief Counsel, AGC-230, Federal Aviation Administration,
800 Independence Avenue, S.W., Washington, D.C. 20591, Telephone: (202) 267-3491

SUPPLEMENTAL INFORMATION:

Comments Invited

Even though this temporary rule is final, interested persons are invited to comment on this amendment and on the proposed permanent rule which would supersede this rule by submitting such written data, views, or arguments as they may desire on any portion of the amendment or proposed rule. Comments that provide the factual basis supporting the views and suggestions presented are particularly helpful in developing reasoned regulatory decisions. Communications should identify the regulatory docket number and be submitted in duplicate to the address listed above. Commenters wishing the FAA to acknowledge receipt of their comments must submit with those comments a self-addressed, stamped postcard on which the following statement is made: "Comments to Docket No. 25149." The postcard will be date/time stamped and returned to the commenter. All comments submitted will be available for examination in the Rules Docket both before and after the closing date for comments.

Availability of Document

Any person may obtain a copy of this document or Notice No. 86-21 by submitting a request to the Federal Aviation Administration, Office of Public Affairs, Attention: Public Information Center, APA-430, 800 Independence Avenue, S.W., Washington, D.C. 20591; or by calling (202) 267-8521. Communications must identify the special rule number of the document.

Background

On December 4, 1986, the FAA issued Notice No. 86-21 (51 FR 44422; December 9, 1986) proposing to establish temporary flight restrictions in the vicinity of the Grand Canyon National Park (GCNP) up to an altitude of 9,000 feet above mean sea level (MSL). The notice also proposed a follow-on final rule to take effect upon expiration of the Special Federal Aviation Regulation (SFAR) in June 1987. As proposed in Notice 86-21, the SFAR would: (1) establish a Special Flight Rules Area from the surface to 9,000 feet MSL in the area of the Grand Canyon; (2) prohibit flights in this area unless specifically authorized by the local FAA Flight Standards District Office; and (3) establish certain terrain avoidance and communications requirements for flights in the area. The proposed final rule would include, in addition to the general restrictions contained in the SFAR, (1) provisions to permit access to the special flight rules area by general aviation operators, and (2) if supported by evidence, provisions for avoidance of certain noise-critical sites in the park by low-flying aircraft.

The original comment period for the temporary SFA closed on January 10, 1987, and this action is based only on those comments received by that date. The original comment period on the proposed permanent rule closed on March 1, 1987. However, Docket No. 25149 has been reopened for public comment until April 15, 1987, to permit further comment based on the actual provisions of this temporary rule.

The need for regulatory action.

In proposing the flight restrictions, the FAA cited both operational reasons of safety and efficiency and environmental reasons arising from concern for the impact of aircraft noise on the park surface.

Safety and efficiency. The Grand Canyon constitutes an attraction to sightseers from the air as well as the ground, which results in an unusual level of air traffic in the airspace above the canyon. Because of the terrain of the canyon and the relatively low level of most sightseeing flights over the Grand Canyon, traffic over the canyon is not controlled by FAA air traffic control. The result is a situation in which a substantial number of aircraft operate in the same general airspace over the canyon under the flight rules that apply to sparsely populated areas and low traffic volume airspace. Separation of aircraft in this airspace is accomplished only by the see-and-avoid responsibility of each pilot and, above 3,000 feet AGL, the 1,000-foot separation of eastbound and westbound traffic under 14 CFR 91.109. While the safety record in the vicinity of the canyon compares favorably with the general accident rates for general aviation and air taxi operators, there have been accidents in the canyon itself, most recently a collision between an air tour airplane and a tour helicopter in June 1986. The FAA attributes the relatively good safety record in the canyon area in large part to the voluntary use by the commercial tour operators, whose flights represent approximately 87 percent of the lower-altitude traffic in the area, of standard route, altitude, and communications procedures. Because each tour operator flies a standard route over the canyon and periodically announces its location and altitude on a common radio frequency at designated reporting points, the pilot of each such aircraft is aware of the location of all other tour aircraft in the area. Notwithstanding this past record, however, the FAA believes that there are two general reasons why some degree of additional regulation of canyon overflights is necessary. First, the existing procedures used by the air tour operators are voluntary and not regulatory. While some degree of control over Part 135 commercial operators can be exercised through the operations specifications of each operator, commercial air tours may be conducted under Part 91 by virtue of an exception to the applicability of Part 135. Section 135.1(b)(2) provides that a person conducting nonstop sightseeing flights within 25 miles of the airport at which the aircraft takes off and lands is not covered by Part 135. Second, the voluntary procedures do not apply to general aviation and military flights. The voluntary procedures, therefore, have substantially contributed to the safe operation of commercial tour operators but have little safety benefit with respect to general aviation, military, and nonparticipating air tour operators. The FAA believes that there is a need to require that commercial operators use the standard procedures and to separate transient general aviation traffic from the regular tour operations for a brief period until permanent procedures for all operators can be developed.

Noise impact on the surface. The FAA believes that there is also a public interest in promoting a quiet environment in the canyon and minimizing the intrusion of aircraft noise on this environment, consistent with operational air safety and efficiency considerations. Congress, in the Grand Canyon National Park Enlargement Act of of 1975, expressly provided for protection of the natural quiet of the Park. Under § 8 of the Act (16 U.S.C. 228g), if the Secretary of the Interior finds that aircraft or helicopter activity within the park is likely to cause a significant adverse effect on the "natural quiet and experience of the Park," he is required to submit recommendations to the Administrator of the FAA for measures to mitigate that impact.

The NPS held a series of public hearings in 1985 and 1986 and solicited comments from the public, including environmental groups and air tour operators, on the subject of aircraft operations at the canyon. Following the above process, the Department of the Interior, in a letter from the Assistant Secretary for Fish and Wildlife and Parks, submitted recommendations to the FAA Administrator on November 17, 1986. The Department did not find a significant impact of aircraft noise on the Park, but rather found that the data available was insufficient for management decisions or recommendations at this time. The Department, therefore, recommended specific actions relating to the safety of aircraft operations, but with respect to aircraft noise recommended further study. The recommendations may be summarized as follows:

1) Adopt airspace/flight regulations which:
   —Provide for the separation of aircraft, including helicopters;
   —Prohibit flights in the inner gorge of the canyon;
   —Provide for some regulation of flights between the inner gorge and the upper rim of the canyon; and
   —Establish flight paths over the canyon which avoid major visitor overlooks and peregrine nesting areas.
2) Install radar at the Grand Canyon National Park Airport to assist in aircraft separation;
3) Undertake a joint 2-year study, with the NPS, of the impacts of aircraft noise on the Park with the object of additional regulation to reduce those impacts.

Finally, the Department offered to consult and cooperate with the FAA in the implementation of these actions.

The FAA will fully and carefully consider the recommendations and continuing advice of the Department of the Interior in the development of aviation safety and environmental measures at GCNP. The Interior recommendations were not specifically reflected in the proposed interim SFAR, in view of the complexity of the recommendations. The SFAR does address the recommendations to an extent, such as the stringent restrictions on aircraft operations below the level of the south rim of the canyon. Those recommendations, and any subsequent information and comments offered by the Department of the Interior, will be fully considered in the promulgation of the permanent final rule proposed in Notice No. 86-21. The FAA agrees that unnecessary flights by aircraft at low levels within the canyon can be extremely intrusive on the park environment and annoying to park visitors. The information available to the FAA at this time does not permit the agency to incorporate specific actions in the temporary special rule. However, the FAA specifically requests comments on recommended environmental measures in the development of the proposed permanent rule. Also, in the interim, authorizations by the Las Vegas Flight Standards District Office to operate in the Special Flight Rules Area will contain conditions which route aircraft away from certain areas, such as the south rim visitor overlooks and Thunder Falls. Such measures may be formally incorporated in the permanent rule, if adopted.

Comments on the proposed SFAR

More than one hundred comments were received on the proposed SFAR by the closing date of January 10. A large number of these comments were in response not to the proposal itself but to editorials in San Francisco and Phoenix newspapers which described the proposal, with some inaccuracies. These comments were generally critical of commercial overflights of the Grand Canyon. Many of the comments, while submitted by January 10, did not distinguish between the temporary rule and the permanent follow-on rule. To the extent the comments were directed toward long-term philosophy for regulation of operations over the canyon, they will be fully considered and addressed in any further rulemaking. The comments will be addressed in this preamble to the extent they related to the temporary rule proposed, and adopted, which will expire on June 15, 1987.

Aircraft noise. A number of commenters, including the Maricopa Audobon Society, the Sierra Club, and the Wilderness Society, stated that aircraft flights should not be permitted over the Grand Canyon or should be limited to altitudes above the rim of the canyon, or higher, to minimize aircraft noise in the Park. The Maricopa Audobon Society and the Sierra Club supported the "quiet canyon" option of prohibiting all aircraft flight above the Park to an altitude of 18,000 feet MSL. Many of these commenters suggested that FAA was simply preserving the existing aircraft overflight situation, which they considered unacceptable. The National Parks and Conservation Association supported the need for regulations but urged that a minimum altitude be established at 2,000 feet above the uppermost rim level, in accordance with FAA Advisory Circular 91-36C.

The National Park Service supported the issuance of regulations, but suggested that the regulations incorporate noise mitigation measures such as routing aircraft away from noise-sensitive areas. NPS also requested that the FAA use the definition of "rim level" developed by the NPS in its 1986 environmental assessment of the proposed GCNP Aircraft Management Plan—generally the uppermost rim of the canyon.

The temporary rule adopted by the FAA provides that an aircraft may not be operated within the Special Flight Rules Area, below 9,000 feet MSL, unless authorized by the FAA Las Vegas Flight Standards District Office. The FSDO will not authorize transient flights in the area under the SFAR. Therefore, general aviation and military flights, which may now operate virtually down to the surface of the canyon floor under FAR § 91.79, will be required to operate above 9,000 feet MSL until June 15.

The Las Vegas (LAS) Flight Standards District Office (FSDO) will authorize qualifying commercial air tour operators to operate in the area, under specific conditions contained in their operations specifications. The minimum altitudes at which the tour operations will be authorized will be as follows. In the western sector (western boundary of the area to Diamond Creek), the minimum authorized altitudes will be 2,500 feet MSL for helicopters and 3,000 feet MSL for fixed wing aircraft. While these altitudes are below the south rim elevation in this area, the interest in minimizing aircraft noise in this sector is reduced by the fact that the river in this area already experiences heavy motorboating and recreational use. Also, NPS has not identified any noise sensitive areas in this sector. Finally, the minimum altitudes are substantially higher than some tour operators have flown in the past.

In the central sector (Diamond Creek to Supai Village), the minimum altitudes authorized will be 5,500 feet MSL for helicopters and 6,000 feet MSL for fixed wing generally, and 6,500 feet MSL helicopter and 7,500 feet MSL fixed-wing above Supai Village. The north rim elevation in this sector averages about 6,000 feet, while the south rim varies from about 5,500 feet to 6,600 feet. In general, the tour routes will climb to higher altitudes heading eastbound as the terrain rises.

In the eastern sector (Supai Village to the eastern boundary), the minimum authorized altitudes will be 6,500 feet MSL for helicopters and 7,500 feet MSL for fixed wing. The elevation of the north rim in this area varies from approximately 5,800 feet to 8,500 feet; the south rim elevation varies from approximately 5,500 feet to 7,500 feet. For comparison, the elevation of the Colorado River in this area averages about 2,400 feet.

In the noise-sensitive central and eastern sectors the minimum altitude imposed by the FAA in the tour operators. operations specifications will be higher than altitudes used by some of the operators in the past. These altitudes are not above the highest point of both rims at every point, but the altitudes do approximate the level of the lower rim of the canyon through that area and virtually preclude sustained operation "in" the canyon. As a result, the minimum altitudes required by the rule for tour operators, general aviation aircraft, and military aircraft are substantially higher than required by existing FAA regulations, 14 CFR § 91.79, and higher than the previous flight altitudes used by some operators.

The FAA believes that the minimum altitudes imposed by the rule are a beneficial change in current procedures and will have a positive effect on aircraft noise impact at the Park. Setting those altitudes a few hundred feet higher in the central and eastern sectors to coincide with the precise rim level, even if it could be determined, would produce very little additional reduction of noise on the Park surface and would cause substantial operational problems for pilots, by compressing traffic into a smaller vertical airspace. The imposition of rim-level altitudes in the western sector of the Special Flight Rules Area was not considered warranted, in view of the lesser impact of aircraft noise on the surface in that sector and the absence of operational problems at the altitudes described above.

The FAA will not require minimum authorized altitudes higher than the rim level, as requested by some commenters, for two primary reasons. First, safety requires that there be a sufficient number of operating altitudes below controlled airspace to provide for the separation, at 500-foot intervals, of eastbound and westbound traffic and the separation of fixed wing and helicopter traffic. Pilots operating aircraft above 10,000 feet MSL under Part 135 and 12,500 feet MSL under Part 91 are subject to certain oxygen requirements. Also, IFR (ATC controlled) traffic may operate in the area from 9,000 feet MSL. The altitudes specified in FAA authorizations, therefore, begin at the minimum altitudes listed above in order to provide an adequate number of practical operating altitudes.

Second, on the information available, the FAA is not in a position to adopt a regulation which has tangible operational and economic impacts for the purpose of mitigating noise impacts, without further review. The FAA acknowledges the strong sentiments of many commenters that the Grand Canyon National Park should be relatively free from aircraft noise. In response, the FAA has adopted a temporary rule which restricts nonessential aircraft flights to altitudes which are generally several thousand feet above the surface of the canyon. Further noise mitigation measures will be considered in the review of public comment on the proposed permanent rule. However, the FAA does not at this time have sufficient technical information or recommendations from other concerned agencies which would support a regulation limiting aircraft overflights to altitudes above this level.

A number of commenters suggested that the avoidance of certain noise-sensitive sites in the canyon was preferable to, or necessary in addition to, the restriction of aircraft to high altitudes. Many of the tour operators commenting on the proposal either now operate, or have proposed to operate, on routes which avoid certain areas of the canyon identified as particularly noise-sensitive. On an interim basis the Las Vegas FSDO, in approving commercial tour routes, will ensure that these routes do avoid the Grand Canyon Village area, Deer Creek and Thunder Falls, the north rim lookout at Cape Royal, Desert View, Point Sublime, and Toroweap to the maximum extent practical. These areas and others which could benefit from protection from overflight will be considered for inclusion in the permanent final rule.

The National Park Service and several other commenters noted that air carrier aircraft do operate over the Park at relatively low altitudes (e.g. 10,000 to 12,000 feet MSL) on occasion, in contrast to representations in Notice 86-21. FAA has determined that such overflights do, in fact, occur, and the agency is taking measures to ensure that departure and arrival clearances at McCarran International Airport do not permit low-altitude deviations over the Grand Canyon.

A number of commenters suggested that the FAA limit the number of aircraft flights over the Park. The density of air traffic above the Grand Canyon, even on peak traffic days in the summer, does not present an operational situation which would require the metering of flights over the canyon. Even without regard to the questions of the agency's authority and the problems of allocating limited operating rights, the FAA does not believe that the current environmental situation at the Grand Canyon supports consideration of such a complex and intrusive regulatory action as limitation on the number of flights. The FAA notes that the Department of the Interior has not requested such a limitation.

Several commenters, among them tour operators and general aviation pilots, expressed doubt that the majority of the public visiting the canyon actually objected to the level of noise caused by overflying aircraft, or that aircraft noise could be heard above the ambient surface sounds of the canyon such as the river.

General aviation operations. Comments on the proposed SFAR were received from the Aircraft Owners and Pilots Association (AOPA), the Arizona Pilots Association, the Experimental Aircraft Association (EAA) and several individual pilots. These commenters criticized the exclusion of general aviation operations from airspace in which commercial operations would be permitted, on grounds of fairness and on the basis that general aviation aircraft were not involved in the June 1986 accident and are not the primary source of aircraft noise in the Park. Several of the commerical tour operators commenting on the proposal supported the right of general aviation operators for access to the same general airspace as the tour operators.

As stated in Notice No. 86-21, the FAA is not proposing to restrict general aviation operations from the Special Flight Rules Area on a permanent basis. The restriction in the temporary rule is adopted only to provide separation of uncontrolled general aviation traffic from the regulated commercial operations until procedures can be developed for transient general aviation flight in the same airspace with the new air tour routes. The SFAR limits general aviation operations to the higher altitude not because of any inherent problem in general aviation operations, but because a regulatory mechanism existed with respect to the commercial operators (standard flight routes/procedures; operations specifications) but not for Part 91 operations. The 9,000 foot limitation continues to permit overflight of the canyon at an altitude which, in the eastern sector of the area, is within 1,500 feet of the minimum altitude authorized for fixed-wing commercial operators and 500 feet of terrain on the north rim.

Several of the commenters cited specific technical problems with a 9,000-foot minimum altitude for general aviation aircraft, including the limited performance capability of many single engine aircraft above that altitude, and the high density altitude common in that region during the summer months. The FAA agrees that operation can be marginal for some single engine aircraft at altitudes above 9,000 feet MSL in hot weather. However, the SFAR adopted expires on June 15, and the FAA does not expect the temperature and density altitude to be a problem before that date. The follow-on rule, if adopted, will contain procedures for transient aircraft operation below 9,000 feet MSL.

The Arizona Pilots Association also objected to the characterization of general aviation pilots as exclusively transient operations by pilots inexperienced with flying above the canyon. The FAA believes that this characterization does apply to many of the general aviation pilots operating above the canyon. To the extent pilots based in the region transit the airspace above the canyon on local flights, the FAA continues to believe that operation at or above 9,000 feet MSL will not be a significant hardship or inconvenience on a temporary basis only through June 15. However, if a local pilot has a continuing operational need for transit through the Grand Canyon Special Flight Rules Area prior to that date, he or she may contact the Las Vegas Flight Standards District Office for consideration of an authorization.

Various alternatives to the 9,000 foot limitation were suggested by the Arizona Pilots Association, EAA, AOPA, and several other commenters, including development of standard procedures and indication of these procedures on flight charts. These comments will be considered in the evaluation of a permanent rule, but are not a practical approach within the time frame of the SFAR adopted. The FAA will also consider certain recomendations for nonregulatory action with respect to flights above the Grand Canyon, such as the installation of radar to monitor air traffic in the area below 9,000 feet MSL.

Impacts on commercial air tour operations. The Grand Canyon Flight Operators Association (GCFOA) and several individual tour operators generally supported the regulation, but requested changes to specific provisions of the temporary rule as proposed. GCFOA, the Helicopter Association International (HAI), and individual helicopter operators objected to the prohibition on operation closer than 500 feet to terrain (discussed below). GCFOA also expressed concern about delays in approval of the operators' Part 135 operations specifications if the rule was implemented on an expedited basis.

The FAA agrees that current air tour operators who submit their proposed tour routes and procedures to the FAA on a timely basis should not be prohibited from operating by a delay in the Las Vegas FSDO's processing of the submissions. Accordingly, the FAA has set an effective date for the rule 30 days after publication to permit review and approval of all submissions, and to make adjustments as necessary, before the requirement takes effect. Therefore, the FAA anticipates no interruption in the operations of operators who submit adequate and timely operating proposals.

GCFOA also commented that any altitude restrictions in the rule should be expressed as MSL (above mean sea level) altitudes rather than using a reference ot the canyon "rim" or "rim level." As stated in the notice, the FAA believes that the canyon rim is not an adequate altitude reference as regulatory guidance for pilots operating above the canyon. The rim elevation varies along the length of the canyon, and the north and south rims are at different elevations for much of the canyon. Accordingly, the temporary rule adopted, as with the proposal, uses specific MSL altitudes rather than the term "rim level" to specify minimum altitudes. The authorizations issued by the Las Vegas FSDO will also use MSL altitudes and not references to the rim.

GCFOA also requested that the FAA establish a continuing working group composed of the FAA, the National Park Service, tour operators, general aviation, environmental groups, and perhaps congressional staff members. While this suggestion is not directly related to the proposed rules, the FAA will consider the Association's recommendation.

Commercial helicopter operations. Individual commercial helicopter tour operators at the Grand Canyon, as well as the GCFOA and HAI, objected to the requirement to remain at least 500 from terrain in the canyon. HAI and the individual helicopter operators also requested that helicopters be authorized to operate below the rim of canyon. The primary objection to the 500-foot restriction was that it would make helicopter tours of the Anasazi ruins near Point Sublime commercially infeasible, because the ruins could not be viewed adequately from 500 feet away. One operator stated that it currently hovers approximately 100 feet away from the ruins on its current tours. Operators also claimed that the restriction made helicopter tours less competitive with fixed-wing tours.

The FAA proposed the 500-foot limitation for both environmental and operational reasons. The rule does not affect fixed-wing Part 135 operations, which are already required by FAR § 135.203

to remain 500 feet from terrain. The rule does serve a safety purpose with respect to Part 91 operations, which are not restricted as to distance from terrain in sparsely populated areas (as long as they remain 500 feet from persons, vehicles, boats, and structures). In addition, the limit provides an environmental buffer against aircraft flight which is unnecessarily close to the terrain and the wildlife of the GCNP. While neither environmental groups nor the NPS provided information to support any specific impact of aircraft overflight on wildlife or other park values (such as the Point Sublime archeological site), the FAA believes that the unique characteristics of the Park, and the congressional statement of policy in the Grand Canyon National Park Enlargement Act of 1975, warrant a greater degree of protection for the surface of the Park than is provided by the general minimum safe altitude restrictions in FAR § 91.79.

One helicopter operator enclosed a copy of a study by Professor D.S. Brumbaugh on the effects of helicopter flights on the Point Sublime Anasazi site. The study did not consider long term fatigue effects on the structure, but concluded that excessive ground velocity/acceleration and resonant shaking of the walls by a single helicopter would not result in damage. However, the study was based on a minimum distance of 300 feet. The operator who submitted the study represented that "current lateral separation from the ruins is maintained at approximately 100 feet." Because the study did not address long term effects, and because the study conditions were more favorable than those of actual tour flights, the FAA does not agree that information available at this time warrants a conclusion that no protection for the site is appropriate.

Other comments. In a joint letter, U.S. Representatives Morris K. Udall and (now Senator) John McCain stated that the proposed regulation forms a basis for a plan to manage aircraft operations around the Grand Canyon. However, they commented that flights should be kept above the canyon rim and expressed concern that the rule would not accomplish this. Also, they urged that the FAA work with NPS to develop a plan which restores the natural quiet of the Park as well as ensures aircraft safety. The FAA believes that the regulation adopted, as implemented using the minimum authorized altitudes described above, is generally consistent with the legislation introduced in the House of Representatives, although the minimum altitudes imposed are somewhat lower than those requested by Congressman Udall and Senator McCain. The views of the Congressmen were primarily directed toward the proposed permanent rule and, therefore, will be fully addressed in any further rulemaking to implement a permanent rule.

The National Transportation Safety Board (NTSB) strongly supported the prohibition on commercial operations conducted under Part 91 in the Special Flight Rules Area. The NTSB also supported the requirement that commercial operators comply with approved routes and altitudes and make position reports on common frequencies. The Board expressed concern, however, over the FAA resources available at the Las Vegas FSDO to evaluate and approve the routes requested by tour operators. As mentioned above, the FAA is allowing 30 days from publication before the rule becomes effective to provide time for the LAS FSDO to evaluate and approve the proposed routes.

The Truxton Canyon Agency noted FAA's statement in the preamble to the proposal that commercial operations to Indian reservations in the Special Flight Rules Area would be authorized, but the Agency requested that this be included in the language of the rule itself. The FAA will not deny any landowners in the Special Flight Rules Area aerial access to their land, including the Indian reservations in the area. Accordingly, the FAA does not believe that it is necessary to include in the rule a statement to the effect that access will continue to the reservations.

THE SPECIAL RULE

For the reasons discussed above, the FAA is adopting a Special Federal Aviation Regulation, to take effect on [30 days after publication] and expire on June 15, 1987, which will do the following:

1. Establish a Grand Canyon National Park Special Flight Rules Area from the surface to 9,000 feet MSL. The area would be marked on aeronautical charts and described in other pilot information publications.

2. Prohibit operation by any aircraft in the defined area unless (a) the operator holds a Part 135 certificate and has express authorization in its Part 135 operations specifications to operate in the airspace, (b) the operator is authorized in writing by the FAA Las Vegas Flight Standards District Office to operate in the airspace, or (c) the aircraft is on an official search and rescue mission. In either

of the first two cases (which will include virtually all flights within the area) the authorization will contain specific limitations on the operation, including minimum altitudes. Minimum allowable flight altitudes will be approximately the rim level of the canyon unless there is an operational need for flight below that level (such as landing at one of the reservations). The terms "rim" or "rim level" are not used to describe altitude restrictions in the authorizations because the north and south rims are at different levels and because the rim is too variable in elevation to constitute a practical flight reference for pilots.

3. Prohibit commercial tour operations below 9,000 feet MSL by Part 91 operators unless they obtain a Part 135 certificate and operations specifications which authorize operation in the Grand Canyon National Park Special Flight Rules Area.

4. Prohibit, except when necessary or when specifically authorized for certain purposes, flight closer than 500 feet to any terrain or structure in the canyon.

5. Require pilots to monitor certain common frequencies and make position reports as specified in their authorization to enter the airspace.

In effect, the rule generally prohibits flight below the approximate level of the south rim of the canyon, except in the western sector where safety and noise impacts permit a lower minimum altitude, and except for those flights necessary for operation of the park and for provision of emergency services. In addition, the rule restricts aircraft operations in the airspace between the rim and 9,000 feet MSL to aircraft with a park-related need to be in the area and to commercial tour aircraft which meet extensive equipment, experience, training, and operational requirements. The restrictions which apply to transient aircraft between the rim and 9,000 feet MSL are temporary and will remain in effect only until procedures for transient operations can be integrated with the standard procedures used by the regular commercial operators over the canyon. The rule imposes no new restrictions on flight above the canyon above 9,000 feet MSL.

Analysis by section.

Section 1 provides that the rule applies to all persons operating under VFR in certain airspace from the surface to 9,000 feet MSL and defines the boundaries of that airspace. Applying the rule to all persons has the effect of applying the rule to military as well as civil pilots. Aircraft operating under IFR would not be operating at the altitudes or in the area covered by the rule. (With the exception of a small portion of VOR airway in the northeast corner of the area, the base of controlled airspace within the designated area is at 9,000 feet MSL or higher.)

Airspace up to 9,000 feet MSL is restricted to include sufficient airspace to permit aircraft to operate at different altitudes for nonconflicting eastbound and westbound operations, e.g., 5,500 and 7,500 feet MSL eastbound and 6,500 and 8,500 feet MSL westbound. Capping the special area at 9,000 feet MSL permits overflight of the canyon by general aviation aircraft eastbound at 9,500 feet, which is within the capability of even small single-engine aircraft.

The lateral boundaries of the area extend beyond the limits of the park itself to include all of the areas which are commonly subject to canyon sightseeing overflights, including certain Indian reservation land, and to provide simplified boundaries for practical compliance by pilots. Where possible, the boundaries have been established coincident with VOR radials to enable pilots to use aircraft navigation equipment to locate their position in relation to a boundary line. A cutout from the area has been provided for the GCNP Airport control zone, in recognition of the need for aircraft to descend to and climb out from the airport. The two published instrument approaches to the GCNP Airport are from the southwest and will not be affected by procedures established by this rule.

Section 2 of the rule defines the term "Park" as the Grand Canyon National Park.

Section 3 of the rule sets forth the requirement for authorization for aircraft to operate in the Special Flight Rules Area. An exception to the general requirements is made for emergencies, to clarify that a bona fide emergency landing in the canyon would not violate this rule. Also, authority is reserved for the Administrator to authorize flights in the area in the infrequent case in which the normal authorization process would not apply. The agency does not anticipate the use of this provision during the duration of the special rule.

Section 3 prohibits flight in the Grand Canyon National Park Special Flight Rules Area unless authorization to operate in the designated area is obtained from the Las Vegas Flight Standards District Office or unless the aircraft is on an Air Force-directed search and rescue mission. Paragraph (a) provides that specific authorization may be incorporated in the operations specifications issued to a

Part 135 operator. Operations specifications are detailed rules and conditions for commercial operations which are issued to each holder of a Part 135 certificate. To FAA's knowledge all of the operators currently conducting commercial air tours of the Grand Canyon hold Part 135 certificates. The Las Vegas Flight Standards District Office (FSDO), in cooperation with the active tour operators, has developed specific conditions and limitations on the Grand Canyon operation of each such operator. Those conditions and limitations will be included in the operations specifications of each tour operator and will be enforced by the FAA. The provisions will include detailed requirements for routes, altitudes, communications and other procedures, and for pilot experience and equipment.

Authorization through operations specifications will permit continuation of the air tour industry at the Grand Canyon without significant change from present procedures. The industry successfully serves a certain segment of the demand for tourist access to the Grand Canyon and has done so with an impressive safety record over the years. The restrictions promulgated in this rule will, however, make the procedures now voluntarily used by most operators mandatory and enforceable. Second, the prescription of certain minimum altitudes will require some operators to fly at higher altitudes on their tours, in some areas, than they have in the past. The minimum altitudes specified in the operations specifications will in most cases be an MSL altitude near to the approximate elevation of the south rim in each sector of the canyon.

Paragraph (a) will also permit continuation of commercial operations to Indian reservations within the Special Flight Rules Area. Such flights are routinely conducted for tourism at the reservations, for pick-up of river rafters, and for aerial supply and transportation services to the reservations. Operators conducting these flights must hold Part 135 certificates and operations specifications and will be subject to the same general restrictions as the tour operators consistent with the nature of their operations.

Paragraph (b) provides that operation in the area is not prohibited if authorized in writing by Las Vegas FSDO and conducted in accordance with the conditions of that authorization. The rule states that authorization will normally be provided only for operations of aircraft necessary for law enforcement, firefighting, emergency medical treatment or evacuation of persons in or near the park, or for support of park maintenance or activities. As mentioned earlier, the NPS has a continuing need for aircraft access to the canyon surface by NPS and contractor aircraft for a wide range of purposes related to operation of the park. FAA, through the Las Vegas FSDO, will authorize such operations by written certificate of authorization upon confirmation from the Superintendent of the GCNP that he requests the authorization for that operation. The written authorization will contain conditions similar to those included in the air tour operators' operations specifications. This will ensure that operations in the Special Flight Rules Area are using common procedures and radio frequencies and that the incidence of low altitude aircraft flights is kept to the minimum necessary for operation of the park.

It is not the FAA's intent to deny air access to any surface point within the Special Flight Rules Area. Flights requested by the NPS or by representatives of the Indian reservation landing areas will be authorized subject to the standard conditions imposed on all operators within the area. Other requests for flight through the area below 9,000 feet MSL, including general aviation and military sightseeing flights, will normally be denied.

Paragraph (c) permits search and rescue (SAR) aircraft under the direction of the U.S. Air Force Rescue Coordination Center to enter the area without prior coordination with the Las Vegas FSDO. SAR missions over the canyon are very infrequent and are not expected to occur during the period of this special rule.

Section 4 requires all commercial sightseeing operations to be conducted under a Part 135 certificate, notwithstanding the exception to Part 135 applicability contained in Section 135.1(b)(2). The requirement will prohibit tour operations by Part 91 operators, under Section 135.1(b)(2), over the canyon below 9,000 feet MSL. To the agency s knowledge all operators currently providing commercial sightseeing flights over the Grand Canyon hold Part 135 certificates, although operations by Part 91 operators have been common in the past.

Section 5 prohibits operation within 500 feet of terrain in the canyon unless necessary for takeoff or landing, unless authorized by the Las Vegas FSDO for one of the park operation purposes listed in Section 3, or except in an emergency. This provision applies the Part 135 restrictions of Section 135.203(a)(1) to all operators. The restriction provides certain minimum protections to unique park terrain, wildlife, and archaeological sites until the effect of low altitude aircraft flight can be determined.

Section 6 requires that pilots operating in the area monitor certain frequencies and make radio position reports at the points specified in their authorization. The FAA believes that the use of common frequencies and periodic reporting of aircraft location, similar to the procedure for a Common Traffic Advisory Frequency at uncontrolled airports, significantly reduces the risk of midair collision. Therefore, this procedure is made mandatory for the duration of the special rule. Exceptions are incorporated for aircraft required to be in contact with the GCNP control tower or on a USAF-directed search and rescue mission.

Section 7 provides that this Special Federal Aviation Regulation will expire on June 15, 1987. The FAA intends to issue a permanent rule to become effective on or before that date, to incorporate the comments received and the results of experience under the SFAR. If development of the rule is delayed and cannot be completed by June 15, the SFAR may be extended to provide the necessary additional time.

THE PROPOSED PERMANENT REGULATION

This SFAR has an expiration date of June 15, 1987. The FAA proposes to issue a permanent final rule effective on or before that date. In Notice No. 86-21, the agency solicited comments on the need for permanent measures to regulate the flight of aircraft above the Grand Canyon, for safety and environmental reasons, and on what those measures should be.

The FAA proposes a final rule which would contain the following provisions:

1. The rule would take effect upon expiration of the SFAR on June 15, 1987.

2. The rule would incorporate the provisions of the SFAR, subject to the additions and revisions listed below.

3. The rule would provide means by which general aviation operators could operate within the Special Flight Rules Area, subject to certain limitations and preconditions. Such provisions could include, for example:

—A requirement for a briefing from a Flight Standards district office or Flight Service Station in the region before entering the area. The briefing could include required procedures (such as reporting points), environmentally sensitive areas which should be avoided, and information on the activities of other operators in the area.

—Preferred or required routes and altitudes for general aviation transit over the canyon.

4. The rule would identify any parts of the canyon which the FAA finds, on the basis of comments received and the recommendations of the Department of the Interior, are unusually sensitive to low-altitude aircraft overflight. These areas could be the subject of voluntary or mandatory limits on overflight below certain minimum altitudes.

The agency specifically requested comments on the following issues:

1. The need for or adequacy of the specific measures proposed.

2. Minimum altitudes for air tour operations and general aviation sightseeing flights above the canyon, including whether different altitudes should be specified in different areas of the canyon.

3. The appropriate lateral boundaries of the proposed Permanent Special Flight Rules Area.

4. Procedures for permitting general aviation flights above the canyon at altitudes comparable to those at which the commercial tour operators fly. Such procedures could include specific routes, altitudes, prerequisite briefings or training, etc.

5. Identification of wildlife, archaeological sites, and other natural and historical values in the Park which might be impacted by aircraft overflight.

6. Identification of the areas of the canyon which are most sensitive and least sensitive to aircraft overflight.

In reopening the comment period in Docket No. 25149 through April 15, the FAA solicits further comment on the above issues in light of the actual provisions adopted in this temporary special rule.

ECONOMIC IMPACT

The economic impact of the special regulation is expected to be minimal. The restriction which the rule imposes on commercial tour operators will not require any substantial changes in their operations. While the rule will require certain of the air tour flights to operate at higher minimum altitudes or farther from terrain than at present, this requirement will have no business or operational costs. The comment was made that, as a result of the requirement to remain 500 feet from terrain, helicopter tour operators would suffer loss of revenue because that distance was too far to permit worthwhile viewing of the Anasazi ruins near Point Sublime. The FAA assumes that even at the greater distance there would still be a demand for trips to the site, in conjunction with the other benefits of a helicopter tour, and that the rule would not inevitably lead to a direct loss in revenue. For the purpose of evaluating the impact of the temporary rule, therefore, the FAA concludes that the helicopter operators have not demonstrated a significant economic impact for the temporary duration of this rule. Other commercial flights necessary for Park and Indian reservation activities, such as air transportation to Indian reservations, will be authorized without substantial change from present operation.

Transient general aviation traffic, which constitutes a minority of canyon overflights, will be restricted only from operating at low altitude. Pilots may still overfly the canyon above 9,000 feet MSL, which at some points is less than 1,000 feet above the north rim of the canyon. En route traffic will not be affected because the Special Flight Rules Area is below the floor of controlled airspace in the area. There is no economic impact on the Department of Defense because there is no official reason for military aircraft to operate over the canyon below 9,000 feet MSL, with the exception of one approved VFR route which crosses the western corner of the Special Flight Rules Area. Because the special rule will have no substantial economic impact on any category of operator, and because the rule is temporary, the FAA has determined that the expected impact of the rule is so minimal that it does not warrant further regulatory evaluation. For the same reasons, this rule (1) is not a major rule under Executive Order 12291, and (2) is not considered significant under Department of Transportation Regulatory Policies and Procedures (44 FR 11034; February 26, 1979).

REGULATORY FLEXIBILITY DETERMINATION

The Regulatory Flexibility Act of 1980 (RFA) was enacted by Congress in order to insure, among other things, that small entities are not disproportionately affected by Government regulations. The RFA requires agencies to review rules which may have a "significant impact on a substantial number of small entities." For purposes of the RFA, small entities are considered to include small businesses, non-profit organizations, and municipalities but not private individuals. Small entities affected by this rule are limited to the approximately 40 Part 135 air tour and air taxi operators operating in the canyon area. As discussed under "Economic Impact" above, the rule will not require any change in the operations of these firms which the agency believes would impose an economic cost. As a result, the impact on the affected small entities, if any, will be substantially less than the threshold for significant impact under agency guidelines. Therefore, I certify that, under the criteria of the Regulatory Flexibility Act, this rule will not have a significant impact on a substantial number of small entities.

THE FINAL RULE

Accordingly, the FAA amends Parts 91 and 135 of the Federal Aviation Regulations (14 CFR Parts 91 and 135) by adding new Special Federal Aviation Regulation (SFAR) 50, effective April 27, 1987.

(Authority: 49 U.S.C. 1303, 1348, 1354(a), 1421, and 1422; 16 U.S.C. 228g; 49 U.S.C. 106(g) (Revised Pub. L. 97-449, January 12, 1983)).

Special Federal Aviation Regulation 50

Special Flight Rules in the Vicinity of the Grand Canyon National Park, AZ

[**Section 1.** *Applicability.* This rule prescribes special operating rules for all persons operating aircraft under VFR in the following airspace, designated as the Grand Canyon National Park Special Flight Rules Area:

> That airspace extending upward from the surface to and including 9,000 feet MSL within an area bounded by a line beginning at lat. 36°09′30″ N., long. 114°03′00″ W.; northeast to lat. 36°14′00″ N., long. 113°12′00″ W.; to lat. 36°30′00″ N., long. 112°36′00″ W.; to lat. 36°30′00″ N., long. 111°42′00″ W.; to lat. 35°59′30″ N., long. 111°42′00″ W.; to lat. 35°57′ 30″ N., long. 112°03′20″ W.; thence counterclockwise via the 5 statute-mile-radius of the Grand Canyon Airport airport reference point (lat. 35°57′09″ N., long. 112°08′47″ W.); to lat. 35°57′30″ N., long. 112°14′00″ W.; to lat. 35°58′00″ N., long. 113°11′00″ W.; to lat. 35°42′30″ N., long. 113°11′00″W.; to lat. 35°38′50″N., long. 113°27′00″W.; thence counterclockwise via the 5-statute-mile radius of the Peach Springs VORTAC to lat. 35°41′20″ N., long. 113°36′00″ W.; thence to the point of beginning.

Section 2. *Definition.* For the purposes of this special regulation, "Park" means the Grand Canyon National Park.

Section 3. *Aircraft operations: general.* Except in an emergency or unless otherwise authorized by the Administrator, no person may operate an aircraft in the airspace described in Section 1 unless the operation—

(a) Is conducted in accordance with a specific authorization to operate in that airspace incorporated in the operator's Part 135 operations specifications and approved by the Las Vegas Flight Standards District Office;

(b) Is authorized in writing by the Las Vegas Flight Standards District Office and is conducted in compliance with the conditions contained in that authorization. Normally authorization will be granted only for operations of aircraft necessary for law enforcement, firefighting, emergency medical treatment/evacuation of persons in the vicinity of the Park, or for support of Park maintenance or activities. Authorization may be issued on a continuing basis; or

(c) Is a search and rescue mission directed by the U.S. Air Force Rescue Coordination Center.

Section 4. *Commercial sightseeing flights.*

(a) Notwithstanding the provisions of Federal Aviation Regulations §135.1(b)(2), nonstop sightseeing flights that begin and end at the same airport, are conducted within a 25 statute mile radius of that airport, and operate in or through the airspace described in Section 1 during any portion of the flight are governed by the provisions of Part 135.

(b) No person holding or required to hold an operating certificate under Part 135 may operate an aircraft in the airspace described in Section 1 except as authorized by operations specifications issued under that part.

Section 5. *Minimum terrain clearance.* Except in an emergency, when necessary for takeoff or landing, or unless authorized by the Las Vegas Flight Standards District Office for a purpose listed in Section 3(b), no person may operate an aircraft within 500 feet of any terrain or structure located between the north and south rims of the Grand Canyon.

Section 6. *Communications.* Except when in contact with the Grand Canyon National Park Airport Traffic Control Tower during arrival for departure or on a search and rescue mission directed by the U.S. Air Force Rescue Coordination Center, no person may operate an aircraft in the airspace described in Section 1 unless he—

(a) Transmits a position report on the appropriate frequency at each reporting point designated in the operator's Part 135 operations specifications or in a written authorization to operate in that airspace issued under Section 3, and

(b) Monitors the appropriate frequency continuously while in that airspace.

Section 7. *Effective and termination dates.* This Special Federal Aviation Regulation is effective April 27, 1987, and terminates on June 15, 1987.]

Special Federal Aviation Regulation 50-1

Special Flight Rules in the Vicinity of the Grand Canyon National Park

Adopted: June 5, 1987 **Effective: June 15, 1987**

(Published in 52 FR 22734, June 15, 1987)

SUMMARY: This action revises the procedures for operation of aircraft in the airspace above the Grand Canyon up to an altitude of 9,000 feet above mean sea level (MSL), and extends the duration of those procedures to June 15, 1992. In recent years, the high volume of air traffic over the park has increased the risk of midair collision. The overflights also generated noise impacts on park surface areas to a degree which may be inconsistent with Federal policies for operation of the park. The restrictions adopted will: (1) retain the Special Flight Rules Area established by SFAR 50 from the surface to 9,000 feet MSL in the area of the Grand Canyon; (2) prohibit flights in this area unless operated in accordance with specific routes, altitudes, and procedures or otherwise specifically authorized by the local FAA Flight Standards District Office; (3) establish boundaries of certain noise-sensitive areas of the Grand Canyon National Park to be avoided by aircraft overflight up to 9,000 feet MSL; and (4) establish certain terrain avoidance and communications requirements for flights in the area. The rules adopted will reduce the risk of midair collision, will reduce the risk of terrain contact accidents below the rim level, and will reduce the impact of aircraft noise on the park environment.

DATES: *Effective date:* June 15, 1987.

Comment date: Comments must be received on or before October 15, 1987.

Expiration date: Special Federal Aviation Regulation No. 50-1 expires on June 15, 1992.

ADDRESSES: Comments on the proposed permanent rule regulation may be mailed in duplicate to:

Federal Aviation Administration, Office of the Chief Counsel, Attention: Rules Docket (AGC-204), Docket No. 25149, 800 Independence Avenue, S.W. Washington, D.C. 20591

or delivered in duplicate to:

FAA Rules Docket, Room 916, 800 Independence Avenue, S.W. Washington, D.C.

Comments may be examined in the Rules Docket weekdays, except Federal holidays, between 8:30 a.m. and 5:00 p.m.

FOR FURTHER INFORMATION CONTACT:

David L. Bennett, Office of the Chief Counsel, AGC-230 Federal Aviation Administration, 800 Independence Avenue, S.W., Washington, D.C. 20591, Telephone: (202) 267-3491.

SUPPLEMENTAL INFORMATION:

Comments Invited

Even though this rule is final, interested persons are invited to comment on this rule by submitting such written data, views, or arguments as they may desire on any portion of the rule. Comments that provide the factual basis supporting the views and suggestions presented are particularly helpful in developing reasoned regulatory decisions. Communications should identify the regulatory docket number and be submitted in duplicate to the address listed above. Commenters wishing the FAA to acknowledge receipt of their comments must submit with those comments a self-addressed, stamped postcard on which the following statement is made: "Comments to Docket No. 25149." The postcard will be date/time stamped and returned to the commenter. All comments submitted will be available for examination in the Rules Docket both before and after the closing date for comments.

Availability of Document

Any person may obtain a copy of this document by submitting a request to the Federal Aviation Administration, Office of Public Affairs, APA-200, 800 Independence Avenue, S.W., Washington, D.C. 20591; or by calling (202) 267-3479. Communications must identify the special rule number of the document.

Background

On December 4, 1986, the FAA issued Notice No. 86-21 (51 FR 44422; December 9, 1986) proposing to establish temporary flight restrictions in the vicinity of the Grand Canyon National Park (GCNP) up to an altitude of 9,000 feet above mean sea level (MSL). The notice also proposed a follow-on final rule to take effect upon expiration of the temporary Special Federal Aviation Regulation (SFAR) in June 1987. As proposed in Notice 86-21, the temporary SFAR would: (1) establish a Special Flight Rules Area from the surface to 9,000 feet MSL in the area of the Grand Canyon; (2) prohibit flights in this area unless specifically authorized by the local FAA Flight Standards District Office; and (3) establish certain terrain avoidance and communications requirements for flights in the area. The proposed follow-on rule (which could also be an SFAR) would include, in addition to the general restrictions contained in the temporary rule: (1) provisions to permit access to the special flight rules area by general aviation operators, and (2) if supported by evidence, provisions for avoidance of certain noise-critical sites in the park by low-flying aircraft.

The comment period for the temporary SFAR closed on January 10, 1987, and for the proposed follow-on rule on March 1, 1987.

On March 23, 1987, the FAA issued SFAR 50 (52 FR 9768, March 26, 1987), a temporary rule identical to the rule proposed in Notice 86-21. SFAR 50 reopened the comment period on Docket No. 25149 for public comment until April 15, 1987, to permit further comment based on the actual provisions of the temporary rule.

The need for regulatory action.

In proposing the flight restrictions, the FAA cited both operational reasons of safety and efficiency and environmental reasons arising from concern for the impact of aircraft noise on the Park surface.

Safety and efficiency. The Grand Canyon constitutes an attraction to sightseers from the air as well as the ground, which results in an unusual level of air traffic in the airspace above the canyon. Because of the terrain of the canyon and the relatively low level of most sightseeing flights over the Grand Canyon, traffic over the canyon is not controlled by FAA air traffic control. The result is a situation in which a substantial number of aircraft operate in the same general airspace over the canyon under the flight rules that apply to sparsely populated areas and low traffic volume airspace. While the total area of the canyon is large, most sightseeing pilots are attracted to particular areas of the canyon, which increases the relative number of aircraft in those areas. Separation of aircraft in this airspace is accomplished only by the see-and-avoid responsibility of each pilot and, above 3,000 feet AGL, the 1,000-foot separation of eastbound and westbound traffic under 14 CFR 91.109.

While the safety record in the vicinity of the canyon compares favorably with the general accident rates for general aviation and air taxi operators, there have been accidents in the canyon itself. The most recent tour operator accident was a collision between an air tour airplane and a tour helicopter in June 1986. The FAA attributes the relatively good safety record in the canyon area in large part to the voluntary use by the commercial tour operators, whose flights represent more than 80 percent of the lower-altitude traffic in the area, of standard route, altitude, and communications procedures. Because each tour operator flies a standard route over the canyon and periodically announces its location and altitude on a common radio frequency at designated reporting points, the pilot of each such aircraft is aware of the location of all other tour aircraft in the area.

Notwithstanding this past record, however, the FAA believes that there are two general reasons why some degree of additional regulation of canyon overflights is necessary. First, the existing procedures used by the air tour operators are voluntary and not regulatory. While some degree of control over Part 135 commercial operators can be exercised through the operations specifications of each operator, commercial air tours may be conducted under Part 91 by virtue of an exception to the applicability of Part 135. Section 135.1(b)(2) provides that a person conducting nonstop sightseeing flights within 25 miles of the airport at which the aircraft takes off and lands is not covered by Part 135.

Second, the voluntary procedures do not apply to general aviation and military flights. The voluntary procedures, therefore, have substantially contributed to the safe operation of commercial tour operators but have little safety benefit with respect to general aviation, military, and nonparticipating air tour operators. The FAA believes that there is a need to require that commercial operators use the standard procedures and to separate transient general aviation traffic from the regular tour operations through the designation of certain routes and altitudes for both Part 135 and non-Part 135 operators.

Noise impact on the surface. The FAA believes that there is also a public interest in promoting a quiet environment in the canyon and minimizing the intrusion of aircraft noise on this environment, consistent with operational air safety and efficiency considerations. Congress, in the Grand Canyon National Park Enlargement Act of 1975, expressly provided for protection of the natural quiet of the park. Under § 8 of the Act (16 U.S.C. 228g), if the Secretary of the Interior finds that aircraft or helicopter activity within the park is likely to cause a significant adverse effect on the "natural quiet and experience of the Park," he is required to submit recommendations to the Administrator of the FAA for measures to mitigate that impact.

The NPS held a series of public hearings in 1985 and 1986 and solicited comments from the public, including environmental groups and air tour operators, on the subject of aircraft operations at the canyon. Following the above process, the Department of the Interior, in a letter from the Assistant Secretary for Fish and Wildlife and Parks, submitted recommendations to the FAA Administrator on November 17, 1986. The Department did not find a significant impact of aircraft noise on the Park, but rather found that the data available was insufficient for management decisions or recommendations at this time. The Department, therefore, recommended specific actions relating to the safety of aircraft operations, but with respect to aircraft noise recommended further study. The recommendations may be summarized as follows:

1) Adopt airspace/flight regulations which:
   - —Provide for the separation of aircraft, including helicopters;
   - —Prohibit flights in the inner gorge of the canyon;
   - —Provide for some regulation of flights between the inner gorge and the upper rim of the canyon; and
   - —Establish flight paths over the canyon which avoid major visitor overlooks and peregrine nesting areas.
2) Install radar at the Grand Canyon National Park Airport to assist in aircraft separation;
3) Undertake a joint 2-year study, with the NPS, of the impacts of aircraft noise on the Park with the object of additional regulation to reduce those impacts.

Finally, the Department offered to consult and cooperate with the FAA in the implementation of these actions.

Various provisions of this regulation implement each of the flight recommendations listed under 1) above. Also, in developing this regulation, the FAA consulted with the Office of the Secretary of the Interior and the National Park Service in the development of regulatory measures to mitigate noise impacts on certain areas of the Grand Canyon National Park. The FAA has agreed to provide all necessary technical assistance to the Department of Interior in the Department's study of aircraft noise at the Park, and the results of that study may be used to develop additional mitigation measures in the future. The recommendation to install radar at the Grand Canyon National Park Airport is still under review by the agency.

Comments on the proposed SFAR

Comments on the long-term rule, as with those on the temporary rule now in effect, tended to address one of four general areas: the noise/environmental impact of aircraft operations on the Park; impact of the proposal on general aviation operations; impact of the proposal on commercial tour operations generally; and impact of the proposal on commercial helicopter operations.

Aircraft noise—minimum altitudes. A majority of commenters, mostly individuals but also several major environmental groups, including the Audobon Society, the Sierra Club, and the Wilderness Society, stated that aircraft flights should not be permitted over the Grand Canyon or should be limited to altitudes above the rim of the canyon, or higher, to minimize aircraft noise in the Park. The Maricopa Audobon Society and the Sierra Club supported the "quiet canyon" option of prohibiting all aircraft flight, above the Park to an altitude of 18,000 feet MSL. The National Parks and Conservation Association supported the need for regulations but urged that a minimum altitude be established at 2,000 feet above the uppermost rim level, in accordance with FAA Advisory Circular 91-36C. A river raft tour company requested a minimum overflight altitude of 7,500 MSL. Other commenters supported minimum flight altitudes from 2,000 feet above the rim to 40,000 feet MSL.

The National Park Service supported the issuance of regulations, but suggested that the regulations incorporate noise mitigation measures such as routing aircraft away from noise-sensitive areas. NPS also requested that the FAA use the definition of "rim level" developed by the NPS in its 1986 environmental assessment of the proposed GCNP Aircraft Management Plan—generally the uppermost rim of the canyon in each sector. Several commenters, including Senator John McCain, requested a minimum altitude of 2,000 feet above the rim as suggested in FAA Advisory Circular 91-36C.

A common theme in virtually all of the comments relating to minimum altitudes was some reference to the canyon rim. Many of the individual commenters simply requested no flights below the rim of the canyon. Other commenters acknowledged the fact that the rim does not provide a usable altitude reference for pilots, and that any minimum altitude would need to be expressed in terms of feet above mean sea level (MSL). However, the rim was still cited as a benchmark for the establishment of such MSL altitudes. Few of the comments offered specific information relating mitigation of surface noise impacts to the restriction of aircraft flight to particular altitudes at near rim level elevations.

An exception was a "Sound Level Experiment" conducted by National Park Service personnel in August 1976. The results of the experiment were submitted to the docket by another commenter and do not necessarily represent National Park Service opinions or findings. Also, the procedure was conducted at one location on one day, with flyovers by one fixed-wing aircraft and one helicopter, and cannot be considered a comprehensive or authoritative study of aircraft noise impacts on the canyon surface. However, the report does provide some indication of the relative surface noise impacts of aircraft overflight below, at, and above rim level elevations.

The test involved multiple flyovers of a sound meter, set up on a plateau at 4,400 feet MSL, at altitudes of 6,400 feet MSL, 7,400 feet MSL, 9,500 feet MSL, 11,500 feet MSL, and 13,500 feet MSL. South rim elevation in the area was 7,400 MSL; river elevation in the area was 2,400 MSL. Flyovers were conducted by a fixed-wing single-engine Cessna 206 and a Bell 206 helicopter. Because FAA has not proposed to restrict flights above 9,000 feet MSL in this rulemaking, the 6,400 feet MSL and 7,400 feet MSL flyovers were of primary interest.

Measurements were taken in A-weighted decibels (sound levels in the human hearing frequency spectrum). The overall mean of the sound levels recorded for the Cessna were 62.48 dBA at 6,400 feet MSL and 59.4 dBA at 7,400 MSL. For the helicopter, the overall mean levels were 62.68 dBA at 6,400 feet MSL and 61.35 dBA at 7,400 MSL. The results indicate that the sound level decreased noticeably as the fixed-wing aircraft moved from 1,000 feet below the rim up to rim level. The helicopter, however, registered only a slight reduction in surface noise impact in the rim level flyover from 1,000 feet lower. Presumably, actual noise levels would be lower at the floor of the canyon, 2,000 feet below the elevation of the test equipment.

The FAA recognizes that the conclusions that can be drawn from such a test are limited, and that full consideration of actual noise impacts on the Park surface will not be possible until the completion of the 2-year noise study contemplated by the Department of the Interior. However, the preliminary conclusions of the August 1986 test tend to support the FAA's approach in the rule adopted, which is to restrict fixed-wing traffic to altitudes at or above the approximate level of the south rim, and to place helicopters 500 feet to 1,000 feet lower for traffic separation.

The rule adopted by the FAA provides that an aircraft may not be operated within the Special Flight Rules Area below 9,000 feet MSL, unless operated in accordance with certain route and altitude restrictions or otherwise authorized by the FAA Las Vegas Flight Standards District Office. The rule specifies different altitudes for transient operators and tour operators, eastbound and westbound traffic, and helicopter and fixed-wing traffic, to separate different types of operations to the maximum extent practical. In order to obtain a sufficient number of operating altitudes for traffic separation below the base of controlled airspace at 9,000 feet MSL, the rule uses the airspace for several thousand feet below 9,000 feet MSL. However, with the exception of the routes west of Diamond Creek, discussed below, the minimum altitudes used are above or only slightly below the elevation of the canyon's south rim. In most cases, the minimum altitudes are 4,000 feet or more above the Colorado River. In addition to minimum altitudes, the rule defines certain especially noise-sensitive areas, discussed in more detail below, in which no transient flights or commercial tours are permitted below 9,000 feet MSL.

The altitude restrictions for transient aircraft are 8,000 feet MSL eastbound and 8,500 feet MSL westbound, with a 6,500 feet MSL route in the west canyon area. Operation by transient aircraft at lower altitudes would not be permitted without express authorization from the Flight Standards District Office, which would normally not be granted for sightseeing flights. Therefore, general aviation flights, which before the implementation of SFAR 50 could operate virtually down to the surface of the canyon floor under FAR § 91.79, will be required to operate at or above those altitudes. With the exception of one area of high terrain near the north rim overlook, the general aviation altitudes are above both the north and south rims of the canyon in all areas.

The Las Vegas (LAS) Flight Standards District Office (FSDO) will authorize qualifying commercial air tour operators to operate in the area, under specific conditions contained in their operations specifications. The minimum altitudes at which the tour operations will be authorized will be as follows. In the western sector (western boundary of the area to Diamond Creek), the minimum authorized altitudes will be 2,500 feet MSL for helicopters and 3,000 feet MSL for fixed wing aircraft. While these altitudes are below the south rim elevation in this area, the interest in minimizing aircraft noise in this sector is reduced by the fact that the river in this area already experiences heavy motorboating and recreational use. Also, NPS has not identified any noise sensitive areas in this sector. Finally, the minimum altitudes are substantially higher than some tour operators have flown in the past.

In the central sector (Diamond Creek to Havasu Canyon), the minimum altitudes authorized will be 5,500 feet MSL for helicopters and 6,000 feet MSL for fixed wing generally, and 6,500 feet MSL helicopter and 7,500 feet MSL fixed-wing above Supai Village. The north rim elevation in this sector averages about 6,000 feet, while the south rim varies from about 5,500 feet to 6,600 feet. In general, the tour routes will climb to higher altitudes heading eastbound as the terrain rises.

In the eastern sector (Havasu Canyon to the eastern boundary), the minimum authorized altitudes will be 6,500 feet MSL for helicopters and 7,500 feet MSL for fixed wing. The elevation of the north rim in this area varies from approximately 5,800 feet to 8,500 feet; the south rim elevation varies from approximately 5,500 feet to 7,500 feet. For comparison, the elevation of the Colorado River in this area averages about 2,400 feet.

In the central and eastern sectors, which contain several noise-sensitive areas, the minimum altitude imposed by the FAA in the tour operators' operations specifications will be higher than altitudes used by some of the operators in the past. These altitudes are not above the highest point of both rims at every point, but the altitudes do approximate the level of the lower rim of the canyon through that area and virtually preclude sustained operation "in" the canyon. As a result, the minimum altitudes required by the rule for tour operators, general aviation aircraft, and military aircraft are substantially higher than required by existing FAA regulations, 14 CFR § 91.79, and higher than the previous flight altitudes used by some operators.

Many of the commenters who criticized the altitudes proposed by the FAA suggested that FAA was simply preserving the existing aircraft overflight situation, which they considered unacceptable. The FAA disagrees. The agency believes that the minimum altitudes imposed by the rule are a beneficial change in current procedures and will have a positive effect on aircraft noise impact at the Park. Setting those altitudes a few hundred feet higher in the central and eastern sectors to coincide with the precise rim level, even if it could be determined, would produce very little additional reduction of noise on the Park surface and would cause substantial operational problems for pilots, by compressing traffic into a smaller vertical airspace. Setting minimum altitudes substantially above the surface of the canyon rim, as requested by some commenters, was not proposed by the FAA. Such altitude restrictions would interfere with ATC-controlled traffic in the National Airspace System; would act as a bar to flight through the area for many aircraft due to decreased aircraft performance at high density altitudes and/or pilot and passenger oxygen use requirements; and would have potential impacts on the air tour industry which are not supportable on the basis of noise impact data available at this time.

The imposition of rim-level minimum altitudes in the western sector of the Special Flight Rules Area was not considered warranted, in view of the lesser impact of aircraft noise on the surface in that sector.

Aircraft noise—avoidance of noise-sensitive areas. A number of commenters suggested that the avoidance of certain noise-sensitive sites in the canyon was preferable to, or necessary in addition to, the restriction of aircraft to high altitudes. The primary criteria for noise sensitivity in the sites suggested were the number of people present in an area and the particular expectation of quiet by persons in a particular area, even if the number of such persons is relatively small. It was also suggested that areas of bighorn sheep populations and peregrine falcon nesting areas should be avoided.

As with recommendations for certain minimum altitudes, the comments requesting avoidance of particular areas by aircraft generally were not supported by technical data. Also, the locations of wildlife populations were not specified, and the information submitted on the impact of aircraft overflight on wildlife in the canyon to date is inconclusive. The FAA expects that the comprehensive study under consideration by the Department of the Interior would provide much more detailed and authoritative information on these subjects.

However, notwithstanding the lack of definitive technical supporting information, the commenters who requested avoidance of certain areas by overflying aircraft were nearly unanimous in the areas suggested for such protection. Moreover, the support for avoidance of low-altitude flight over certain areas was very broadly based, including not only environmental groups but also air tour operators, the Aircraft Owners and Pilots Association, and general aviation pilots. Accordingly, the FAA believes it appropriate at this time to proceed with designation of areas for avoidance of aircraft overflight up to the upper limit of the Special Flight Rules Area, 9,000 feet MSL.

Many of the tour operators commenting on the proposal either now operate, or have proposed to operate, on routes that avoid certain areas of the canyon identified as particularly noise-sensitive. The Las Vegas FSDO, in approving commercial tour routes, has notified operators that their routes must avoid the Grand Canyon Village area, Deer Creek and Thunder Falls, the north rim lookout at Cape Royal, Desert View, Point Sublime, and Toroweap to the maximum extent practical.

To make these restrictions regulatory, and to apply them to all operators equally, the regulation adopted specifically identifies the following areas as noise-sensitive areas:

—Toroweap Overlook.

—The Thunder River/Deer Creek Falls/Tapeats Creek area north of a line 1 mile north of the Colorado River. (The southern boundary will permit westbound transient aircraft to follow the river through the area at 8,500 feet MSL. Eastbound transient aircraft and all tour operators will be routed well to the south of area.)

—The South Rim/Grand Canyon Village area extending north to Phantom Ranch.

—The North rim area from Outlet Canyon to Cape Royal.

—The watchtower at Desert View Overlook.

The areas are defined in the rule in terms consistent with air navigation. The regulation prohibits flight in the areas except when required by safety or some Park-related purpose. An additional limited exception to the South Rim/Phantom Ranch area is provided for aircraft landing at or taking off from Grand Canyon National Park Airport or Tusayan Airport.

Several commenters also requested that the Point Sublime area be designated a flight-free zone. The NPS did not include this area, however, and the FAA believes that the 500-foot terrain clearance restriction is sufficient to avoid the archeological site at Point Sublime.

General aviation operations. SFAR-50 originally restricted general aviation flights to 9,000 feet temporarily to provide separation of transient general aviation traffic from the regulated commercial operations until procedures could be developed for transient general aviation flight below that altitude. Comments on Notice 86-21 or on the SFAR were received from the Aircraft Owners and Pilots Association (AOPA), the Arizona Pilots Association, the Experimental Aircraft Association (EAA), the Soaring Society of America, and several individual pilots. These commenters criticized the exclusion of general aviation operations from airspace in which commercial operations would be permitted, on grounds of fairness and on the basis that general aviation aircraft were not involved in the June 1986 accident and are not the primary source of aircraft noise in the Park. Several of the commercial tour operators commenting on the proposal also supported the right of general aviation operators for access to the same general airspace as the tour operators.

The Arizona Pilots Association also objected to the characterization of general aviation pilots as exclusively transient operations by pilots inexperienced with flying above the canyon. While the FAA agrees that many local pilots are undoubtedly experienced in flying in that area, the agency continues to believe that many of the general aviation pilots operating above the canyon are on a one-time or infrequent flight in the area and do not have such experience.

Various alternatives to the 9,000 foot limitation were suggested by the Arizona Pilots Association, EAA, AOPA, and several other commenters, including development of standard procedures and indication of these procedures on flight charts.

The rule adopted contains procedures for four basic transient procedures for flight in the Special Flight Rules Area. The routes are regulatory rather than advisory, but incorporate some degree of flexibility for varying operational needs. The four basic routes are an eastbound route at 8,000 feet MSL; a westbound route at 8,500 feet MSL; a west canyon route between Pearce Ferry and Diamond Creek at 6,000 feet MSL eastbound and 6,500 feet MSL westbound; and a direct route from Grand Canyon National Park Airport to Las Vegas, also used by tour operators. Pilots flying the routes will be required to remain to the right of the river and to avoid the noise-sensitive areas identified in the rule.

Designation of specific transient routes and commercial tour routes generally reserves different altitudes for opposite-direction traffic and different types of operations (such as fixed-wing and helicopter). The routes do not in any way assure separation of individual aircraft. Pilots using the routes are in a VFR environment and remain fully responsible for seeing and avoiding other aircraft. Also, the routes do not relieve the pilot from compliance with any other Federal Aviation Regulation, including FAR 91.79, Minimum Safe Altitudes.

The routes will be indicated on the sectional aeronautical chart to be published on September 24, 1987, and in the meantime will be indicated in Class II Notices to Airmen (NOTAM's). The procedures as described in the rule are clear and simple even without a chart depiction, however. Because all information will be furnished in charts and publications, no briefing will be required before operation on the routes. The FAA, in Notice 86-21, requested comments on whether a briefing should be required before operation in the area. Most comments on the briefing opposed the idea. The FAA believes that a briefing requirment, if adopted, would impose an unacceptable burden on the FAA facility or facilities responsible for providing the briefings. Also, it would be difficult to track which pilots had had a recent briefing and which had not. Accordingly, the FAA will publish the procedures and information needed to operate the routes, but the agency does not see the further need for a briefing and will not require a briefing for such operations.

The routes permit transient flight in the same areas of the canyon as the routes authorized for the air tour operators. The transient routes are at different altitudes than the tour routes, simply for separation of the transient traffic from the relatively heavy tour operator operations. Because helicopter routes are assigned to the altitudes immediately below the fixed-wing tour routes, the transient routes are the next available higher altitudes which can be maintained throughout the Special Flight Rules Area. Basically, these altitudes are 8,000 feet MSL eastbound and 8,500 feet westbound. These altitudes vary from 500 feet to 2,000 feet above the comparable fixed-wing tour route altitudes. While at most locations the altitudes are to some degree above the rim of the canyon, they provide a view of the canyon comparable to that available to the tour operators throughout the canyon. Finally, pilots who elect to operate above 9,000 feet MSL may avoid all restrictions associated with the Special Flight Rules Area.

Accordingly, transient operations are distinguished from commercial tour operations only to the extent that they are assigned a slightly higher altitude stratum, for separation. Several commenters requested that the FAA simply adopt a single set of tour routes and permit or require all operators to use them, as is done on an advisory basis at Niagara Falls, NY. The FAA rejected this suggestion for several reasons. First, it would tend to concentrate all aircraft overflights of the canyon at certain altitudes, resulting in compression of traffic. Second, the tour routes are more complex than those appropriate for a transient operator's one-time flight over the canyon, and it was not practical to develop a single set of routes which served both purposes. Also, conveying the degree of information required to operate on the existing air tour routes would require a briefing of the transient pilot. Commenters objected to such a briefing requirement, and the FAA found it to be impractical from a resource standpoint in any event. Finally, the models offered for common routes, such as Niagara Falls, NY, involved small areas with very simple procedures. The size of the Grand Canyon, the complexity of the canyon terrain, and the high altitudes involved make a simple, common procedure for all operators impractical.

Impacts on commercial air tour operations. In comments on Notice 86-21, the Grand Canyon Flight Operators Association (GCFOA) and others expressed concern about delays in approval of the operators' Part 135 operations specifications prior to implementation of the temporary rule. However, all operators that have applied for the operations specifications amendments have received approval at this time.

GCFOA and several individual tour operators generally supported the regulation. Grand Canyon Airlines suggested that commuter airline standards be applied to all Part 135 operators conducting tour flights at the canyon. The FAA believes that the application of Part 135 standards to all commercial tour operators is sufficient, and that the added imposition of commuter standards to all operators is not required.

The National Transportation Safety Board (NTSB) strongly supported the prohibition on commercial operations conducted under Part 91 in the Special Flight Rules Area. The NTSB also supported the requirement that commercial operators comply with approved routes and altitudes and make position reports on common frequencies. No other comments were received objecting to the prohibition on commercial tour flights under Part 91.

Commercial helicopter operations. Individual commercial helicopter tour operators at the Grand Canyon, as well as the GCFOA and the Helicopter Association International (HAI), objected to the requirement to remain at least 500 from terrain in the canyon. HAI and the individual helicopter operators also requested that helicopters be authorized to operate below the rim of the canyon. The primary objection to the 500-foot restriction was that it would make helicopter tours of the Anasazi ruins near Point Sublime commercially infeasible, because the ruins could not be viewed adequately from 500 feet away. One operator stated that it currently hovers approximately 100 feet away from the ruins on its current tours. Operators also claimed that the restriction made helicopter tours less competitive with fixed-wing tours.

The FAA proposed the 500-foot limitation for both environmental and operational reasons. The rule does not affect fixed-wing Part 135 operations, which are already required by FAR § 135.203 to remain 500 feet from terrain. The rule does serve a safety purpose with respect to Part 91 operations, which are not restricted as to distance from terrain in sparsely populated areas (as long as they remain 500 feet from persons, vehicles, boats, and structures). In addition, the limit provides an environmental buffer against aircraft flight which is unnecessarily close to the terrain and the wildlife of the GCNP. While neither environmental groups nor the NPS provided information to support any specific impact of aircraft overflight on wildlife or other Park values (such as the Point Sublime archeological site), the FAA believes that the unique characteristics of the Park, and the congressional statement of policy in the Grand Canyon National Park Enlargement Act of 1975, warrant a greater degree of protection for the surface of the Park than is provided by the general minimum safe altitude restrictions in FAR § 91.79.

One helicopter operator enclosed a copy of a study by Professor D.S. Brumbaugh on the effects of helicopter flights on the Point Sublime Anasazi site. The study did not consider long term fatigue effects on the structure, but concluded that excessive ground velocity/acceleration and resonant shaking of the walls by a single helicopter would not result in damage. However, the study was based on a minimum distance of 300 feet. The operator who submitted the study represented that "current lateral separation from the ruins is maintained at approximately 100 feet." Because the study did not address long term effects, and because the study conditions were more favorable than those of actual tour flights, the FAA does not agree that information available at this time warrants a conclusion that no protection for the site is appropriate.

Boundaries of the Special Flight Rules Area. The Truxton Canyon Agency noted FAA's statement in the preamble to the proposal that commercial operations to Indian reservations in the Special Flight Rules Area would be authorized, but the Agency requested that this be included in the language of the rule itself. The FAA will not deny any landowners in the Special Flight Rules Area aerial access to their land, including the Indian reservations in the area. Accordingly, the FAA does not believe that it is necessary to include in the rule a statement to the effect that access will continue to the reservations.

The Bureau of Land Management of the Department of the Interior and the Forest Service of the Department of Agriculture both requested that the northern boundary of the Special Flight Rules

Area be amended to exclude certain lands administered by these agencies. Both commenters were concerned that the regulation would interfere with their air operations over the government land. The FAA has not altered the boundaries of the Special Flight Rules Area as it was proposed, and that area is indicated on the April 9 edition of the Las Vegas Sectional Aeronautical Chart. However, in response to these comments, the purposes for which authorizations for operation in the Special Flight Rules Area have been expanded to include "aerial access to and maintenance of other property located within the Special Flight Rules Area." Accordingly, the Las Vegas Flight Standards District Office will accommodate any requests by pilots for these agencies for operations over their respective land north of the Grand Canyon National Park.

The National Park Service and several other commenters requested that the Special Flight Rules Area be expanded to include the entire Grand Canyon National Park, especially the northern area up to Marble Canyon. The Special Flight Rules Area boundaries are simpler than the Park boundaries, and several small areas of the Park are excluded. The FAA does not intend to alter the Special Flight Rules Area boundary for this purpose at this time. However, the FAA will monitor the effect of excluding the Marble Canyon area from the rule, and will consider the possible extension of the Special Flight Rules Area to Marble Canyon in the future.

THE SPECIAL RULE

For the reasons discussed above, the FAA is revising Special Federal Aviation Regulation 50, with the revisions to take effect on the expiration of SFAR 50 on June 15, 1987, and to expire on June 15, 1992. SFAR 50 as amended, designated as SFAR 50-1, will do the following:

1. Continue the Grand Canyon National Park Special Flight Rules Area from the surface to 9,000 feet MSL. The area will be marked on aeronautical charts and described in other pilot information publications.

2. Prohibit operation by any aircraft in the defined area unless (a) the operator complies with specific route and altitude procedures for transient aircraft; (b) the operator is authorized in writing by the FAA Las Vegas Flight Standards District Office to operate in the airspace, (c) the operator holds a Part 135 certificate and has express authorization in its Part 135 operations specifications to operate in the airspace, or (d) the aircraft is on an official search and rescue mission. For flights authorized under paragraphs (b) or (c), the authorization will contain specific limitations on the operation, including minimum altitudes. Minimum allowable flight altitudes will be approximately the rim level of the canyon unless there is an operational need for flight below that level (such as landing at one of the reservations). The terms "rim" or "rim level" are not used to describe altitude restrictions in the authorizations because the north and south rims are at different levels and because the rim is too variable in elevation to constitute a practical flight reference for pilots.

3. Prohibit operation in certain noise-sensitive areas unless necessary for emergency or Park-related purposes.

4. Prohibit commercial tour operations below 9,000 feet MSL by Part 91 operators unless they obtain a Part 135 certificate and operations specifications which authorize operation in the Grand Canyon National Park Special Flight Rules Area.

5. Prohibit, except when necessary or when specifically authorized for certain purposes, flight closer than 500 feet to any terrain or structure in the canyon.

6. Require pilots to monitor certain common frequencies and make position reports as specified in their authorization to enter the airspace.

Analysis by section.

Section 1 provides that the rule applies to all persons operating under VFR in certain airspace from the surface to 9,000 feet MSL and defines the boundaries of that airspace. Applying the rule to all persons has the effect of applying the rule to military as well as civil pilots. Aircraft operating under IFR would not be operating at the altitudes or in the area covered by the rule. (With the exception of a small portion of VOR airway in the northeast corner of the area, the base of controlled airspace within the designated area is at 9,000 feet MSL or higher.)

Airspace up to 9,000 feet MSL is restricted to include sufficient airspace to permit aircraft to operate at different altitudes for nonconflicting eastbound and westbound operations, for fixed-wing and helicopter operations, and for commercial air tour and transient sightseeing flights. Capping the special area at 9,000 feet MSL permits overflight of the canyon at 9,500 feet without restriction.

The lateral boundaries of the area extend beyond the limits of the park itself to include all of the areas that are commonly subject to canyon sightseeing overflights, including certain Indian reservation land, and to provide simplified boundaries for practical compliance by pilots. Where possible, the boundaries have been established coincident with VOR radials to enable pilots to use aircraft navigation equipment to locate their position in relation to a boundary line. A cutout from the area has been provided for the GCNP Airport control zone, in recognition of the need for aircraft to descend to and climb out from the airport. The two published instrument approaches to the GCNP Airport are from the southwest and will not be affected by procedures established by this rule.

Section 2 of the rule defines the term "Park" as the Grand Canyon National Park, and "Special Flight Rules Area" as the Grand Canyon National Park Special Flight Rules Area.

Section 3 of the rule sets forth the requirement for authorization for aircraft to operate in the Special Flight Rules Area. An exception to the general requirements is made for emergencies, to clarify that a bona fide emergency landing in the canyon would not violate this rule.

Section 3 prohibits flight in the Grand Canyon National Park Special Flight Rules Area unless the operator complies with specific procedures, routes, and altitudes; unless authorization is obtained from the Las Vegas Flight Standards District Office; or unless the aircraft is on an Air Force-directed search and rescue mission.

Paragraph (a) permits operation over the canyon without further authorization from the FAA if the pilot complies with one of four specific procedures. The four basic routes are an eastbound route at 8,000 feet MSL; a westbound route at 8,500 feet MSL; a west canyon route between Pearce Ferry and Diamond Creek at 6,000 feet MSL eastbound and 6,500 feet MSL westbound; and a direct route from Grand Canyon National Park Airport to Las Vegas. Pilots flying the three tour routes will be required to remain to the right of the river and to avoid the noise-sensitive areas identified in the rule.

Paragraph (b) provides that operation in the area is not prohibited if authorized in writing by the Las Vegas FSDO and conducted in accordance with the conditions of that authorization. The rule states that authorization will normally be provided only for operations of aircraft necessary for law enforcement, firefighting, emergency medical treatment or evacuation of persons in or near the park; for support of park maintenance or activities; or for aerial access to or maintenance of property located within the area. As mentioned earlier, the NPS has a continuing need for aircraft access to the canyon surface by NPS and contractor aircraft for a wide range of purposes related to operation of the park. The written authorization for such operations will contain conditions similar to those included in the air tour operators' operations specifications. This will ensure that operations in the Special Flight Rules Area are using common procedures and radio frequencies and that the incidence of low altitude aircraft flights is kept to the minimum necessary for operation of the park.

It is not the FAA's intent to deny air access to any surface point within the Special Flight Rules Area. Flights requested by the NPS, Bureau of Land Management, Forest Service, or by representatives of the Indian reservation landing areas will be authorized subject to the standard conditions imposed on all operators within the area. Other requests for flight through the area below the altitude of the routes described in Section 3(a), including general aviation and military sightseeing flights, will normally be denied. However, the FAA acknowledges that there may be circumstances in which it would be appropriate to grant authorization for a Part 91 operator to operate in the Special Flight Rules Area using the same routes and procedures used by the Part 135 operators.

Paragraph (c) provides that specific authorization may be incorporated in the operations specifications issued to a Part 135 operator. Operations specifications are detailed rules and conditions for commercial operations which are issued to each holder of a Part 135 certificate. To FAA's knowledge all of the operators currently conducting commercial air tours of the Grand Canyon hold Part 135 certificates. The Las Vegas FSDO, in cooperation with the active tour operators, has developed specific conditions and limitations on the Grand Canyon operation of each such operator. Those conditions and limitations will be included in the operations specifications of each tour operator and will be enforced by the FAA. The provisions will include detailed requirements for routes, altitudes, communications and other procedures, and for pilot experience and equipment.

Authorization through operations specifications will permit continuation of the air tour industry at the Grand Canyon. The industry successfully serves a certain segment of the demand for tourist access to the Grand Canyon and has done so with an impressive safety record over the years. The restrictions promulgated in this rule will, however, make the procedures now voluntarily used by most operators mandatory and enforceable. Second, the prescription of certain minimum altitudes will require some operators to fly at higher altitudes on their tours, in some areas, than they have in the past. The minimum altitudes specified in the operations specifications will in most cases be an MSL altitude near to the approximate elevation of the south rim in each sector of the canyon.

Paragraph (c) will also permit continuation of commercial operations to Indian reservations within the Special Flight Rules Area. Such flights are routinely conducted for tourism at the reservations, for pick-up of river rafters, and for aerial supply and transportation services to the reservations. Operators conducting these flights must hold Part 135 certificates and operations specifications and will be subject to the same general restrictions as the tour operators consistent with the nature of their operations.

Paragraph (d) permits search and rescue (SAR) aircraft under the direction of the U.S. Air Force Rescue Coordination Center to enter the area without prior coordination with the Las Vegas FSDO. SAR missions over the canyon are very infrequent.

Section 4 prohibits operation by all aircraft in 5 defined areas of the Grand Canyon, except in an emergency or when otherwise necessary for safety of flight, or unless authorized by the Las Vegas Flight Standards District Office for a purpose listed in Section 3(b). The areas are:

(a) *Toroweap overlook.*

(b) *Thunder River/Deer Creek Falls/Tapeats Creek.*

(c) *South Rim/Phantom Ranch.*

(d) *North rim overlook.*

(e) *Desert View.*

Section 5 requires all commercial sightseeing operations to be conducted under a Part 135 certificate, notwithstanding the exception to Part 135 applicability contained in Section 135.1(b)(2). The requirement will prohibit tour operations by Part 91 operators, under Section 135.1(b)(2), over the canyon below 9,000 feet MSL. To the agency's knowledge all operators currently providing commercial sightseeing flights over the Grand Canyon hold Part 135 certificates, although operations by Part 91 operators have been common in the past.

Section 6 prohibits operation within 500 feet of terrain in the canyon except (1) as necessary for takeoff or landing; (2) if authorized by the Las Vegas FSDO for one of the park operation purposes listed in Section 3; or (3) in an emergency. This provision applies the Part 135 restrictions of Section 135.203(a)(1) to all operators. The restriction provides certain minimum protections to unique park terrain, wildlife, and archaeological sites until the effect of low altitude aircraft flight can be determined.

Section 7 requires that pilots operating in the area monitor certain frequencies and make radio position reports at the points specified in their authorization. Transient operators will be required to monitor the common frequencies but not to make position reports, in consideration of their lesser familiarity with the terrain features used for reporting points. The FAA believes that the use of common frequencies and periodic reporting of aircraft location, similar to the procedure for a Common Traffic Advisory Frequency at uncontrolled airports, significantly reduces the risk of midair collision. Therefore, this procedure is made mandatory. Exceptions are incorporated for aircraft required to be in contact with the GCNP control tower or on a USAF-directed search and rescue mission.

The requirement in Section 7(b) that all operators monitor certain frequencies has the effect of requiring that all aircraft operating in the Special Flight Rules Area have an operating radio transceiver. The FAA believes that this requirement is important not only for receiving traffic information, through reports by other aircraft, but also for receiving the current Grand Canyon altimeter setting. The altimeter setting in the area often varies considerably from that at Las Vegas or other airports from which Grand Canyon overflights frequently originate. Failure to obtain a current setting could result in operation less than 500 feet from traffic operating at another assigned altitude. The agency believes the impact of the requirement is minimal because virtually all overflying aircraft have radios and because no-radio aircraft may still overfly the canyon above 9,000 feet MSL.

Section 8 provides that SFAR 50-1 will expire on June 15, 1992. The expiration in 5 years will provide for a review of the rule following completion of a Department of Interior noise study and after an extended period of experience with flight operations under the rule.

REQUEST FOR COMMENTS

While this SFAR is a final rule, the FAA is requesting comments on the provisions of the rule adopted. This further request for comments is in consideration of the great diversity of opinion expressed in the comments received to date, and in recognition of the fact that the transient routes and noise-sensitive areas, while proposed in substance, were not identified in detail until publication of this rule. This rule may be amended in consideration of comments received.

The agency specifically requests comments on the following issues:

1. The dimensions of the Special Flight Rules Area.

Boundaries. The northern boundary of the Special Flight Rules Area could be adjusted to provide more operating space for the Tuweep and Whitmore airports, and to avoid inclusion of Bureau of Land Management and Forest Service lands not related to the Grand Canyon. Second, it may be appropriate to add a northeast extension of the Special Flight Rules Area along the Grand Canyon to Marble Canyon, in consideration of operational and environmental problems with low-altitude aircraft flight in this area. Such an extension would be approximately the width of the Grand Canyon and would extend northeast from the existing boundary as far as the Page Airport Traffic Area.

Altitude. Minimum altitudes for air tour operations and transient sightseeing flights have been established by this rule. Because of the lower terrain of the Grand Canyon in the central and western areas of the canyon, it would be possible to reduce the upper limit of the Special Flight Rules Area in these areas. Possible altitudes could be surface to 8,000 feet MSL in the central sector (Diamond Creek to Havasu Canyon), with a 9,000-foot area around Toroweap Overlook, and surface to 6,000 feet MSL in the western sector (west of Diamond Creek).

Such an action would not reduce the minimum altitudes for aircraft flight over the canyon and would not affect the noise-sensitive area restrictions. It would continue to separate transient and air tour traffic, but could relieve the need to provide special routes for transient aircraft in the western part of the canyon.

2. The dimensions of the noise-sensitive areas described in Section 4 of the SFAR.

Specifically, comments are requested on any operational problems of the areas adopted and, conversely, whether any of the areas could be expanded without significant operational impacts.

3. The transient operating routes and altitudes established in Section 3(a) of the SFAR.

Comments are due by October 15, 1987, to the address listed under "ADDRESSES" earlier in this document.

REGULATORY EVALUATION

Benefit-Cost Analysis

The regulatory evaluation prepared for this final rule examines the costs and benefits of special flight rule requirements in the vicinity of the Grand Canyon National Park. This rule impacts operators of airplanes and helicopters under FAR Parts 91 and 135 by adopting the following flight restrictions:

(1) Retain the Special Flight Rules Area established by SFAR 50 from the surface to 9,000 feet MSL in the area of the Park; (2) prohibit flights in this area unless operated in accordance with specific routes, altitudes, and procedures or otherwise specifically authorized by the Las Vegas FSDO; (3) establish boundaries of certain noise-sensitive areas of the Park to be avoided by aircraft overflight up to 9,000 feet MSL; and (4) establish certain terrain avoidance and communications requirements for flights in the area.

Costs. The FAA estimates that the total incremental cost of compliance expected to accrue from implementation of the rule to be negligible. This rule Potentially impacts two types of operators (airplane and helicopter) under Parts 91 and 135.

Under Part 91, there are three general classes of operators. The cost impact, if any, on each these operators is briefly described below:

Transient operators represent those local or cross-country general aviation operators who overfly the Park, primarily for sightseeing but also for point-to-point transit. This rule will permit such operators to fly only at specific altitudes while in the Special Flight Rules Area. Although such altitudes will be higher than in recent years, the gratification from viewing the Park is not expected to be significantly reduced. Also, because of the altitude of the terrain, the minimum altitudes specified in the rule will not significantly increase the cost of climbing to altitude for overflight of the canyon.

Part 91 Commercial Tour Operators. Prior to SFAR 50, commercial tour operations under Part 91 in the area were conducted under an exemption from Part 135. This rule will eliminate such operations. It will prohibit commercial tour operations below 9,000 feet MSL by Part 91 operators, although an operator may obtain a Part 135 certificate. Ordinarily, the additional Part 135 training, maintenance requirements, etc., would impose additional costs. However, such costs are not expected to materialize. According to personnel at the Las Vegas FSDO, there have not been any Part 91 commercial operations in the Park since June 1986, though prior to this time there were a small number. The lack of these operators in the area is borne out by the fact that no comments were received from any such operator. Therefore, the FAA estimates that the number of such operators who would have entered the Park over the next four years, if any, would be small. For this reason, the cost impact, if any, on Part 91 commercial tour operators is expected to be negligible.

Other aircraft operators in the area include law enforcement officials, fire fighters, emergency medical teams, Park maintenance staff, Bureau of Land Management and Forest Service contractors, etc., which may be conducted under Part 91 or Part 135 depending on the operator and the nature of the operation. Prior to SFAR 50, they operated freely over the Park. This rule will allow them to continue operations if they obtain written authorization from the Las Vegas FSDO and comply with conditions of the authorization. Thus, since this rule will not cause any significant changes in necessary flights for such operators, the cost impact, if any, is estimated to be negligible.

Under Part 135, operators of airplanes and helicopters will potentially be impacted. This rule will impose three requirements on these operators. Two of these requirements represent specific routes and altitudes. These two requirements will not significantly affect their operations because virtually all of the operators already voluntarily limit their flight to specific routes that roughly coincide with the routes that will be required by the Las Vegas FSDO under this rule. The new routes will avoid noise-sensitive areas, and the deviations around these areas are neither expected to have an increase in air tour operation costs nor to reduce the quality of the air tour package by excluding popular sites from the routes. Most of these operators voluntarily maintain separation between their respective tours and have traditionally operated at altitudes similar to those in this rule. Although prior to SFAR 50, they could deviate from those altitudes and routes at will, the new regulatory procedures, which include 500- or 1,000-foot separation between helicopters and airplanes, along with the specified higher altitudes, are not perceived by tour operators to impose significant, if any, costs. The third requirement will prevent operators from operating within 500 feet of terrain or structures. For airplanes, this requirement has no cost, because the 500-foot restriction is already incorporated in Part 135, § 135.203. Part 135 helicopter operations are not subject to the § 135.203 restriction, however, and will be affected by the provision in this rule. This requirement is not expected to have a significant cost impact in terms of loss of revenue from sightseeing as some operators have indicated, because most passengers on these helicopter tours take the tours largely for the experience of the helicopter ride rather than close inspection of any particular terrain or structure.

The requirement in Section 7(b) that all operators monitor certain frequencies has the effect of requiring that all aircraft operating in the Special Flight Rules Area have an operating radio receiver. While all Part 135 operators would be equipped with radios, there may have been a few no-radio Part 91 operations in the past. The agency believes the impact of the requirement will be minimal because virtually all overflying aircraft have radios and because those few aircraft without radios may still overfly the canyon above 9,000 feet MSL.

Benefits. This rule is expected to generate benefits in terms of enhanced safety and to some extent reduced noise in the Park. Safety benefits will take the form of reduced likelihood of fatalities from midair and canyon wall collisions. Aircraft noise will be reduced by rerouting Part 91 and 135 traffic around noise-sensitive areas. This rule will improve safety by regulating both Part 91 and Part 135 operators in the Special Flight Rules Area. In the past, there have been a few cases of Part 91 aircraft colliding with the terrain, and one case of a midair collision involving a Part 135 aircraft. This rule is expected to reduce the likelihood of such accidents, especially those involving general aviation pilots unfamiliar with terrain and wind patterns. Further, by specifying procedures, routes, and minimum separation distances for Part 91 and Part 135 operators, this rule will enhance safety. The FAA estimates safety benefits in monetary terms by assigning a value of $1 million to each of the lives that are expected to be saved annually as a result of implementing this rule. A recent review of the NTSB data base for Part 91 and 135 accidents in the vicinity of the Park, revealed that over the past 12 years at least four accidents have occurred and resulted in 41 fatalities. Over this 12-year period, the safety situation near the Park has resulted, on average, in three fatalities annually. While the large majority of the fatalities occurred in two incidents involving air tour aircraft, the projection of three fatalities per year as an average is useful for the purpose of estimating economic benefits of the rule. Therefore, estimates of safety benefits are based on the belief that this rule will reduce the likelihood of three fatalities annually. Supporting this premise is the fact that two of the four accidents noted previously involved only Part 91 operators, and the rule will substantially restrict such operations at low altitude in the canyon area. In monetary terms, safety benefits are expected to amount to an estimated $3 million annually (in 1986 dollars) as the result of this rule.

Another benefit of this rule is aircraft noise reduction. This benefit is extremely difficult to quantify in monetary terms due to its intangible nature. Thus, it is viewed in this evaluation as a qualitative benefit and is assumed to be measured only in terms of gratification. The reduction in aircraft noise that will result from the deviation around noise-sensitive areas and from the higher flight altitudes, especially by Part 91 operators, is expected to increase enjoyment from sightseeing on the ground on the part of tourists and environmentalists, though to what extent cannot be estimated by the FAA.

On balance, in view of the expected cost of compliance and benefits, the FAA concludes that this rule is cost-beneficial.

Regulatory Flexibility Determination

The Regulatory Flexibility Act of 1980 (RFA) was enacted by Congress in order to insure, among other things, that small entities are not disproportionately affected by Government regulations. The RFA requires agencies to review rules which may have a "significant impact on a substantial number of small entities." For purposes of the RFA, small entities are considered to include small businesses, non-profit organizations, and municipalities but not private individuals. The vast majority of the small entities potentially impacted by this rule are unscheduled Part 135 air taxi operators with nine or less aircraft owned. As a result of using the cost of compliance, which is estimated to be negligible, per small entity and comparing it to the annualized threshhold of significant economic impact ($3,700 in 1986 dollars) the FAA concludes that a substantial number of small entities will not be substantially impacted by this rule.

Trade Impact Assessment

This rule is expected to have neither an adverse impact on the trade opportunities for U.S. firms doing business abroad nor on foreign firms doing business in the United States. This assessment is based on the fact that Part 135 air tour operators impacted by this rule do not compete with similar operators abroad, and their competitive environment is confined to the Grand Canyon area.

Conclusions

For the reasons set forth above under Regulatory Evaluation, the FAA has determined that this final rule (1) is not a major rule under Executive Order 12291, and (2) is not considered significant under Department of Transportation Regulatory Policies and Procedures (44 FR 11034; February 26, 1979). For the reasons set forth above under Regulatory Flexibility Determination, I certify that, under the criteria of the Regulatory Flexibility Act, this rule will not have a significant impact on a substantial number of small entities.

PUBLICATION DATE

This amendment is effective on June 15, 1987, less than 30 days after publication in the Federal Register, in order to prevent the expiration of SFAR 50 before the amendment, SFAR 50-1, takes effect. The provisions of SFAR 50 are already in effect, and the Special Flight Rules Area is charted on the current Las Vegas Sectional Aeronautical chart. This amendment continues certain of the restrictions in SFAR 50 and relieves other restrictions (as in the case of the minimum altitudes for transient operations), but does not impose any additional restrictions. Accordingly, I find that 30 days notice before publication is not required by 5 U.S.C. 553(d) and that, in any event, good cause exists for publication less than 30 days before the effective date.

ADOPTION OF THE SPECIAL FEDERAL AVIATION REGULATION

For the reasons set out above, 14 CFR Parts 91 and 135 are amended by revising Special Federal Aviation Regulation No. 50 to read SFAR 50-1 effective June 15, 1987.

(Authority: 49 U.S.C. 1303, 1348, 1354(a), 1421, and 1422; 16 U.S.C. 228g; 49 U.S.C. 106(g) (Revised Pub. L. 97-449, January 12, 1983)).

Special Federal Aviation Regulation 50-2

Special Flight Rules in the Vicinity of the Grand Canyon National Park

Adopted: May 27, 1988 **Effective: September 22, 1988**

(Published in 53 FR 20264, June 2, 1988)

SUMMARY: This action revises the procedures for operation of aircraft in the airspace above the Grand Canyon up to an altitude of 14,500 feet above mean sea level (MSL). The regulations are adopted to comply with recent legislation requiring additional FAA regulations based on the recommendations of the U.S. Department of the Interior. The rule implements the recommendations of the Department of the Interior, with some modifications. The rule: (1) establishes a Special Flight Rules Area from the surface to but not including 14,500 feet MSL in the area of the Grand Canyon; (2) prohibits flights below a certain altitude in each of five sectors of this area, with certain exceptions; (3) establishes flight-free zones from the surface to 14,500 feet MSL above large areas of the Park; (4) provides for routes for commercial tour operators and transient operators through the canyon area; and (5) retains certain existing terrain avoidance and communications requirements for flights in the area.

DATES: *Effective date:* September 22, 1988.

Comment date: Comments must be received on or before August 1, 1988.

Expiration date: Special Federal Aviation Regulation No. 50-2 expires on June 15, 1992.

ADDRESSES: Comments on the proposed permanent rule regulation may be mailed in duplicate to:

Federal Aviation Administration, Office of the Chief Counsel, Attention: Rules Docket (AGC-204), Docket No. 25149, 800 Independence Avenue, S.W., Washington, D.C. 20591

or delivered in duplicate to:

FAA Rules Docket, Room 916, 800 Independence Avenue, S.W., Washington, D.C.

Comments may be examined in the Rules Docket weekdays, except Federal holidays, between 8:30 a.m. and 5:00 p.m.

FOR FURTHER INFORMATION CONTACT:

David L. Bennett, Office of the Chief Counsel, AGC-230, Federal Aviation Administration, 800 Independence Avenue, S.W., Washington, D.C. 20591, Telephone: (202) 267-3491.

SUPPLEMENTAL INFORMATION:

Comments Invited

Even though this rule is final, interested persons are invited to comment on this rule by submitting such written data, views, or arguments as they may desire on any portion of the rule. Comments that provide the factual basis supporting the views and suggestions presented are particularly helpful in developing reasoned regulatory decisions. Communications should identify the regulatory docket number and be submitted in duplicate to the address listed above. Commenters wishing the FAA to acknowledge receipt of their comments must submit with those comments a self-addressed, stamped postcard on which the following statement is made: "Comments to Docket No. 25149." The postcard will be date/time stamped and returned to the commenter. All comments submitted will be available for examination in the Rules Docket both before and after the closing date for comments.

Availability of Document

Any person may obtain a copy of this document by submitting a request to the Federal Aviation Administration, Office of Public Affairs, APA-200, 800 Independence Avenue, S.W., Washington, D.C. 20591; or by calling (202) 267-3479. Communications must identify the special rule number of the document.

Background

On June 5, 1987, the FAA issued SFAR 50-1 (52 FR 22734, June 15, 1987), a special federal aviation regulation establishing flight regulations in the vicinity of the Grand Canyon National Park. That rule remains in effect until the effective date of the rule adopted in this action.

On August 18, 1987, legislation was enacted to require a study of aircraft noise impacts at a number of national parks and to impose flight restrictions at 3 parks: Grand Canyon National Park, Yosemite National Park in California, and Haleakala National Park in Hawaii. (Public Law 100-91).

Section 3 of Public Law 100-91 required the Secretary of the Interior to submit to the Administrator recommendations for action necessary for the protection of resources in the Grand Canyon from adverse impacts associated with aircraft overflights. The recommendations were to provide for substantial restoration of the natural quiet and experience of the park. With limited exceptions, the recommendations were to prohibit the flight of aircraft below the rim of the Canyon and to designate zones that were flight free except for purposes of administration of underlying lands and for emergency operations.

Public Law 100-91 further required the Administrator of the FAA to prepare and issue a final plan for the management of air traffic above the Grand Canyon. The plan was to implement the recommendations of the Secretary without change unless the Administrator determined that implementing the recommendations would adversely affect aviation safety. In that event, the FAA was required, in consultation with the Secretary and after notice and opportunity for hearing, to revise the DOI recommendations to resolve the safety impacts and issue regulations implementing the revised recommendations in the plan.

DEPARTMENT OF INTERIOR RECOMMENDATIONS

Pursuant to Section 3(b)(1) of Public Law 100-91, the Office of the Secretary of the Interior in December 1987 transmitted recommendations to the FAA for an aircraft management plan at the Park. The recommendations submitted included both rulemaking and nonrulemaking actions. The Department of the Interior (DOI) recommendations which were regulatory in nature and which could have required rulemaking action by the FAA for implementation may be summarized as follows:

1. Establish special use airspace (SUA) designated as the "Grand Canyon Special Flight Rules Area" and classified as prohibited airspace over the geographical boundaries of the Grand Canyon from the surface to as high as 14,500 feet MSL.

2. Establish within the Grand Canyon Special Flight Rules Area three types of zones:

a. *Below Rim Level Zone.* Aircraft flight would be prohibited below the rim of the canyon with limited exceptions for NPS administrative flights; flights to Supai and Hualapai Indian reservations; and certain flights transporting persons to or from boat trips on the Colorado River. Rim level elevation of the Canyon will be considered as follows: (1) 6,000 feet MSL for the eastern section from Lees Ferry to Boundary Ridge, where the Grand Canyon visibly begins to widen; (2) 7,500 feet MSL from Boundary Ridge to Tuweep (outside the flight-free zones); (3) 6,500 feet MSL from Tuweep to Diamond Creek; and (4) 5,000 feet MSL for the western section from Diamond Creek to the Grand Wash Cliffs.

b. *Flight-free Zones.* Flight would be prohibited, with the exception of the categories of flights excepted from flight below the rim, in 4 large areas together encompassing 530,000 acres or 44 percent of the total park area. The areas are set forth in detail in Notice 88-3 issued by the FAA on February 29.

c. *Above Rim Level Zone.* Flight above rim level and outside of flight-free zones, to 14,500′ MSL, would be subject to special route and altitude regulations for separation of aircraft. In some cases, the space between flight-free zones is limited to 2-mile wide corridors in which any air tours and transient general aviation operations would be confined.

3. Retain the existing prohibition on operation of aircraft within 500 feet of any terrain or structure within the canyon.

4. Consider adoption of the "hemispherical rule" (§ 91.109), which specifies different altitudes for eastbound and westbound aircraft, for aircraft operation outside of the flight-free zones.

5. Modify or eliminate low-altitude Federal airways V-257, V-293, and V-210 to avoid the flight-free zones and preferably the entire Special Flight Rules Area. On a temporary basis while the matter is being studied, NPS recommended that V-257 and V-293 be relocated to travel between the Page VOR and the Tuba City VOR, and that V-210 be moved 5 miles south of its present location in the vicinity of the Park.

Exceptions to the restrictions contained in the recommendations would be allowed only in an emergency, in the case of inclement weather, or if otherwise necessary for safety of flight. The Manager of the FAA Las Vegas Flight Standards District Office (FSDO) and the Superintendent, GCNP will jointly develop procedures to address these exceptions.

DOI also recommended that the FAA undertake several items that would not require rulemaking action at the present time. The action which the FAA will take in response to those recommendations is discussed in Notice 88-3.

NOTICE OF PROPOSED RULEMAKING 88-3

In order to provide public notice of and opportunity for comment on the DOI recommendations, as those recommendations would be implemented by FAA regulation, the FAA issued Notice of Proposed Rulemaking 88-3 on February 29, 1988 (53 FR 7096; March 4, 1988). The FAA proposal substantially accepted the area boundaries, altitudes, and flight restrictions contained in the DOI recommendations.

However, the FAA's preliminary review identified certain aspects of the recommended plan which could have safety ramifications for aircraft operations. The proposal described the safety concerns and requested public comment on potential safety problems. The notice contained a proposed rule which differed from the DOI recommendations in some respects, notably the number and configuration of flight corridors, as a proposed means of resolving the safety problems discussed. Comments were requested on all aspects of the DOI recommendations and the FAA proposal.

FAA Finding of Adverse Impact on Safety

On March 30, the FAA issued a formal finding that certain elements of the recommendations submitted by DOI, if adopted as received, would have an adverse impact on aviation safety. The FAA noted that the findings involved only a relatively small portion of the total recommendations made by DOI and that the FAA had accepted the DOI plan substantially as received.

A copy of the March 30 finding has been placed in the public docket. The FAA's safety concerns were summarized in the finding as follows:

1. A single, 2-mile-wide corridor ("Dragon corridor") is provided for southbound routing of all "circle" tours operating from Grand Canyon Airport and for a large number of tour flights operating from Las Vegas. DOI assumed, and the FAA agrees, that under the DOI plan the Grand Canyon Airport local tours would operate in a counter-clockwise direction, proceeding north through the Zuni Point Corridor, west across the Kaibab Plateau, and south through the Dragon corridor. Tours from Las Vegas would continue to cross Havasu Canyon and would then either proceed directly to Grand Canyon Airport or would turn northeast through the Fossil Canyon Corridor and south through the Dragon corridor. As a result, westbound circle tour traffic would meet a large proportion of eastbound Las Vegas traffic at the north end of the Dragon corridor. Opposite-direction flights would be turning into the same narrow strip of airspace. The direction of the turn would make observation of other aircraft difficult for pilots while in the turn, particularly from low-wing aircraft.

2. As a result of the reliance on the Dragon corridor and the configuration of that corridor, traffic exiting the corridor (near Cocopa Point) would merge with the Las Vegas traffic proceeding direct to Grand Canyon Airport from Havasu Canyon. These two streams of traffic include the large majority of arrivals at the Grand Canyon Airport, so the potential for traffic conflict in this area is significant.

3. The recommended plan eliminates the current route for straight-in approaches to Grand Canyon Airport Runway 21 from the northeast. As a result, more than 90 percent of arriving traffic would arrive at the edge of the airport traffic area in the same general location, with limited opportunity for altitude separation. (Terrain is approximately 7,000 feet MSL and air tour operations are limited to 10,000 feet MSL and below by passenger oxygen requirements.) This area is bounded on the north by the Bright Angel Flight Free Zone and, for practical purposes, is limited on the south by southwest departures during the typical Runway 21 operation. The funneling of arriving traffic (as many as 80 aircraft per hour in peak periods) into the same airspace west of the airport traffic not only would concentrate this traffic in a see-and-avoid environment but also would present the Grand Canyon Airport Air Traffic Control Tower with a problem in handling these arrivals.

4. The 2-mile width of the Zuni Point and Dragon corridors limits the room for separation of aircraft using those corridors. While not strictly a safety issue, navigation within the narrow corridors by transient pilots may not be practically attainable given the limited visual landmarks and lack of electronic navigation aids in certain areas of the canyon.

5. The Thunder River/Toroweap Flight-Free Zone has the effect of diverting north- and southbound traffic around the east or west ends of the zone. In the east, these flights would conflict with Las Vegas tour traffic using the western corridor northbound. On the west, the north/south traffic would conflict with operations into and out of Tuweep and Whitmore Airports. The fact that the frequency of the affected north/south flights may not be high does not diminish the importance of resolving the potential conflict.

6. The specification of a 7,500-foot MSL minimum flight altitude from Toroweap to Supai Point eliminates an additional flight stratum, from 6,500 feet MSL to 7,500 feet MSL, which would otherwise be available in this area. This airspace could be used to route flights to and from the Indian reservations, including river runner pickup operations, at an altitude different than that used by tour operations.

7. Application of the special rules to IFR operations, and relocation of the three affected Federal airways, would impact IFR access to Grand Canyon Airport and IFR transient traffic. It cannot be determined whether a satisfactory alternate route structure can be developed until potential routings off other VOR stations in the area have been planned and flight-checked.

For each of the above issues, possible solutions to the problem identified that did not involve modification of the recommended plan were found to be either not feasible or to present a different safety impact. Accordingly, some revision of the recommended measures was determined to be necessary to resolve these issues.

FAA-Department of Interior Consultation

In addition to continuing informal contacts, representatives of the FAA and the National Park Service met on April 27 to discuss the elements of a final rule. The regulation adopted by the FAA reflects the agreements reached at that meeting. On May 17, the Office of the Secretary of the Interior sent a letter to the FAA Administrator outlining DOI's understanding of the agreement, and noting that only one area of difference remained—the use of the Tuckup Corridor by commercial air tour operations. The final rule adopted establishes the Tuckup Corridor, but, as explained more fully below, the FAA will not authorize air tour routes through that corridor. Accordingly, the FAA and DOI are in agreement on the content of the final regulation adopted.

Comments on Notice 88-3

More than 100 comments were received on the NPRM. Comments received for a brief period after the comment period closing date of March 25, as well as those received during the comment period, were considered in the adoption of this rule.

Most comments expressed either an interest in reducing aircraft noise at the Grand Canyon National Park or an interest in avoiding unnecessary flight restrictions for aircraft operations. The comments are discussed below by general issue.

I. *Compliance with Public Law 100-91.* Many commenters stated that the FAA proposal was inconsistent with the purposes of Public Law 100-91, in that it reduced the area of flight-free zones and, consequently, the size of the area in which the "natural quiet" of the canyon would be restored. Some of these commenters were critical of DOI, for making any accommodation for aircraft overflight of the canyon, and requested that all flights over the Grand Canyon be banned.

The FAA agrees that the intent of Public Law 100-91 can be considered the creation of flight-free areas to make large areas of the Grand Canyon National Park substantially free of aircraft noise. The rule adopted achieves this purpose. However, it was not the intent of the legislation to ban aircraft from overflying the Grand Canyon. In this regard, the FAA believes that viewing of the canyon from the air is a legitimate and valuable means of appreciating the beauty of the Grand Canyon. This policy is supported by the legislative history of Public Law 100-91 and the objectives stated by DOI in its December recommendations to the FAA. The agency further believes that the resources of the canyon can be protected without an exclusion of aircraft, which would have a major adverse impact on air travel through this area of the southwest. It is the intent of the rule adopted to permit the continuation of aerial viewing of the canyon, and air travel through the area, in a manner consistent with the stated purposes of § 3 of Public Law 100-91 to substantially restore the natural quiet of the Grand Canyon within the boundaries of the national park.

II. *General configuration of the Special Flight Rules Area (SFRA).* Few comments objected to the area boundaries recommended by the DOI or those proposed by the FAA, which were identical in most respects. Several commenters objected to the FAA proposal to establish the northern boundary of the SFRA at the Grand Canyon National Park boundary. DOI recommended a boundary further to the north, which included lands outside of the park and well north of the canyon's north rim. Other commenters supported the FAA boundary, to minimize the restriction on flights through the area.

Because the Forest Service and the Bureau of Land Management have not objected to the recommended boundary, with suitable provisions for access, the FAA has adopted the northern boundary as recommended.

Several commenters objected to the inclusion of a large area around Marble Canyon, in the northeast part of the Grand Canyon National Park. Objections were that the area unnecessarily restricted flight operations in the area, particularly in and out of Marble Canyon and Cliff Dwellers Lodge Airports, even though there are no identified aircraft noise problems or complaints in this area. The FAA believes that the SFRA must extend to the northern limit of the Grand Canyon National Park as recommended. However, the FAA agrees that the width of the area originally recommended by DOI, which extends the SFRA beyond the boundaries of the canyon proper or the National Park, should be reduced to facilitate aerial access to the two airports and transit through the area. This action will have no effect on the prohibition of low-altitude flight above the canyon and no impact on noise-sensitive areas.

Several commenters objected to the general ceiling of 14,499 feet MSL, proposed by the FAA to coincide with the top of the flight-free zones recommended by DOI. Because flight is prohibited to that altitude only within the flight-free zones, this subject is discussed in more detail below in connection with those zones. Alternate altitudes suggested were 9,500 feet MSL and 11,500 feet MSL. The FAA continues to believe that while flight through the SFRA should be permitted (outside of the flight-free zones and above the minimum flight levels), general rules for the transit of air tour and transient aircraft through this airspace should be provided by special rule. Accordingly, the ceiling of 14,499 feet MSL proposed in the NPRM is adopted, to provide a uniform ceiling to the entire area and to designate an area in which special operating rules will apply.

III. *Flight-free zones.* A large number of commenters favored the flight-free zones recommended by DOI, and a small number requested larger zones to further restrict aircraft flight. A common comment was that the zones, in order to be effective in providing noise-free areas within the canyon, must be large. The flight corridors proposed by the FAA, it was argued, resulted in a large number of smaller zones that did not provide central noise-free areas, since no part of the canyon was far from aircraft flight paths. Specific comments on the flight-free zones primarily related to the flight corridors between them, which are discussed below. One commenter requested elimination of the Shinumo Flight-Free Zone altogether, because the zone substantially restricts aviation in that area with little environmental benefit, in consideration of the small number of persons that use the area.

It is the FAA's intent to adopt the DOI flight-free zones as recommended, subject only to adjustment of the adjacent flight corridors as necessary to assure safe aircraft operations. In the rule adopted, the flight-free zones are substantially identical to those recommended by DOI, and the flight corridors proposed by the FAA have been eliminated and/or modified to achieve large flight-free zones. In the case of the Toroweap/Thunder River Flight-Free Zone, an area 1½ miles in radius has been extended around the south side of Toroweap Overlook to provide a noise buffer to that point.

Flight-free zones: ceiling. FAA proposed the altitude recommended by DOI for the ceiling of the flight-free zones—14,499 feet MSL—specifying a limit one foot lower than 14,500 feet in order to permit use of that altitude. Some aviation commenters objected to the altitude as too high for safe operation and discriminatory toward general aviation operators, and suggested alternatives of 9,500 feet MSL and 11,500 feet MSL.

The FAA does not agree that the 14,499-foot altitude itself will result in unsafe operation. The altitude is simply too high for the performance and oxygen equipment of a large percentage of general aviation aircraft. Rather than encourage marginal operations over the top of the flight-free zones, therefore, the ceiling will, as DOI intended, require these aircraft to deviate around the zones. While potentially burdensome, particularly for transient general aviation operations, this requirement is not inherently unsafe and has been adopted.

In areas of the SFRA outside of the flight-free zones, the minimum altitudes range from 5,000 feet MSL to 10,000 feet MSL to permit transient operation through the area at altitudes separated from congested commercial tour routes.

IV. *Flight corridors.* The five 4-mile-wide flight corridors proposed by the FAA were addressed in virtually all of the comments received. Many commenters supported the three 2-mile-wide corridors recommended by DOI, and objected to the additional and wider corridors proposed by the FAA. Most of the comments on the FAA corridors were directed toward the "Shoshone Point Corridor" extending northeast from Grand Canyon Airport across the canyon. Several commenters suggested that alignment with VOR radials was not necessarily a benefit, since VOR signals often cannot be received at lower altitudes near the canyon due to terrain and distance from the stations. The FAA agrees and has reconfigured the corridors to rely on prominent terrain features as well as VOR signals, where possible.

Shoshone Point Corridor. Many commenters vehemently objected to the Shoshone Point Corridor because it crossed the canyon south rim near noise-sensitive overlooks, and because it passed over the canyon near popular trails used by a large number of Park visitors. The proposed corridor was in the center of the large Bright Angel Flight-Free Zone recommended by DOI, and would have diminished the noise benefits to be realized from that zone.

Pilots, aircraft operators and aviation organizations supported the purpose of the Shoshone Point Corridor—to relieve traffic conflicts at the north and south ends of the Dragon Corridor and to prevent an unacceptable concentration of arriving traffic at the western edge of the Grand Canyon Airport Traffic Area. Some of these commenters supported the Shoshone Point Corridor either without restriction, or with limitations to mitigate noise impact, including a limitation to one-way traffic descending for arrival at the airport from a relatively high altitude at low power settings.

Others commented that while there was a need to resolve the identified traffic conflicts to the west, the proposed Shoshone Point Corridor was simply too close to an environmentally sensitive area. One suggested alternative was a corridor that crossed Shoshone Point but extended much further to the east, to avoid the Bright Angel Trail and Phantom Ranch areas. This alternative is operationally feasible but was still objectionable to DOI because there would continue to be aircraft overflight of the central canyon area. Another alternative suggested was for aircraft proceeding southbound through the Dragon corridor to turn toward the airport after crossing the Colorado River. In conjunction with a widening of the north end of the Dragon Corridor, this would contribute to resolution of the conflicts identified by the FAA.

The rule adopted does not include the Shoshone Point Corridor. The FAA believes that, while the Shoshone Point Corridor was an ideal operational solution to certain safety problems with the DOI recommendations (in the Dragon Corridor and the approach to the airport traffic area), those problems can be resolved by alternate means. The alternate measures include a reconfiguration of the Dragon Corridor and special air traffic control procedures for arrivals and departures at Grand Canyon Airport. If at any time in the future it becomes apparent to the FAA that the alternate measures are insufficient to assure safety, the FAA would consider the option of approving airport approaches from the northeast over Shoshone Point until a new procedure could be developed.

Zuni Point Corridor. The FAA proposal placed a flight corridor between the Desert View and Bright Angel Flight Free Zones, as recommended by DOI, but modified the corridor by describing it in terms of VOR radials and DME arcs off the Grand Canyon VOR. Comments favored the simpler and more direct corridor recommended by DOI, and that version has been adopted in the final rule.

Dragon Corridor. Most of the aviation commenters had some comment on the Dragon Corridor ("Cocopa Point Corridor" in the NPRM). A number of commenters supported the FAA concern with conflicting traffic at the north end of the corridor, where eastbound and westbound traffic would meet head on while turning south into the 2-mile wide corridor, and at the south end of the corridor, where traffic exiting the corridor met flights inbound from Supai Point to Grand Canyon Airport. Commenters suggested several solutions to the problems identified, including use of the Shoshone Point Corridor; widening the north end of the Dragon Corridor; widening the entire Dragon Corridor; and routing traffic southbound in the Dragon Corridor direct to the Grand Canyon Airport after crossing the Colorado River. Some non-aviation commenters stated that any safety problems could be resolved within the configuration recommended by DOI, and that no changes to the corridor should be made.

The FAA believes that traffic can be accommodated in the general routing plan recommended by DOI, with modifications to the Dragon Corridor as recommended. First, the northern entry to the corridor will be centered on the Dragon rock formation. Both eastbound and westbound aircraft will be required to turn before reaching the Dragon, assuring that opposing direction flights will remain separated throughout the turn into the corridor. Tour operators are required to announce reaching the Dragon on a common radio frequency, so pilots will be aware of other flights in the corridor at the same altitude. Fixed-wing air tour flights will be limited to one-way southbound operations, and transient traffic will be limited to altitudes of 10,500 feet MSL or higher. Helicopter operations will be able to operate in 2-way traffic at a different altitude from any fixed-wing traffic.

Aviation commenters also supported the FAA's concern that exit from the south end of the corridor presented two related problems—the mixing of corridor traffic with other traffic arriving from Las Vegas, and the concentration of virtually all traffic arriving at Grand Canyon Airport at the same general location on the west side of the airport traffic area. Of the alternatives suggested, the FAA believes that with the elimination of the Shoshone Point Corridor, the only practical solution is to route traffic southbound in the Dragon Corridor direct to the Grand Canyon Airport from the Colorado River, effectively adding a small area to the corridor across the south canyon rim near Hermit's Rest (rather than Cocopa Point).

While this will result in an increase in aircraft noise in that area, there is a net benefit to the Park from the elimination of the Shoshone Point Corridor and the creation of a large Bright Angel Flight-Free Zone as recommended. Also, FAA will establish a dual procedure for air tour aircraft southbound in the Dragon Corridor. All arriving aircraft will contact the Grand Canyon Airport Tower as they cross the Colorado River. If traffic is light, the aircraft will be directed to continue in the corridor across Cocopa Point. If traffic is congested, the aircraft will be directed to proceed over the Hermit's Rest exit for a north base entry to the airport. Finally, because helicopters would operate between the airport and the south rim at an altitude below arriving fixed-wing traffic, helicopter operators could exit the Dragon Corridor at Cocopa Point and would not be permitted to proceed across Hermit's Rest. Therefore, operations in the Hermit's Rest area will be limited to the minimum number necessary for safe operation.

One commenter requested that the Dragon Corridor be configured so as to provide the maximum protection for Point Sublime, on the north canyon rim. The FAA and DOI have agreed on a new configuration of the Dragon Corridor that serves the aviation objectives described above, but which prevents aircraft from approaching closer than one mile to Point Sublime.

Finally, the Dragon Corridor will consist of two levels. A 2-mile-wide corridor centered on the Dragon at the north end and Cocopa Point at the south end, with the cutoff over Hermit's Rest, will be established from 7,500 feet MSL to 10,499 feet MSL for tour routes. A 4-mile-wide corridor centered on the Page VOR 203° magnetic radial will be established from 10,500 feet MSL to 14,499 feet MSL for transient operations. The distinct corridors permit precise navigation by tour operators based on prominent geographical features, with which they are familiar, and permit navigation by VOR by transient pilots who would not always be familiar with terrain features.

Fossil Canyon Corridor. DOI recommended, and the FAA proposed, the "Fossil Canyon Corridor" between Fossil Canyon and Timp Point near Steamboat Mountain. A few commenters suggested the corridor was unnecessary. However, the majority of commenters supported the corridor either because it was part of the DOI proposal, or because it was necessary for certain tour routes from Las Vegas. The final rule adopts this corridor as recommended by DOI.

Tuckup Corridor. The additional corridor through the Thunder River/Toroweap Flight-Free Zone proposed in the NPRM was opposed by commenters who supported the DOI recommendations. Aviation comments tended to be divided according to interest in north-south operations in this area. General aviation pilots and at least one tour operator expressed the need for a route through the area, while tour operators who would not personally use such a route commented that it was unnecessary. Information developed at the public hearings and submitted in the docket also indicated that the area is used by only a very few persons on an annual basis.

The FAA continues to believe there is a safety interest in routing north-south traffic directly through this area, to keep this traffic clear of activity around Tuweep Airport and the narrow northern end of the Fossil Canyon Corridor. The FAA agrees with comments that the corridor should be aligned on a north-south direction, to minimize the area affected and to avoid the Tuckup Canyon and Kanab

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Creek areas, which are used on occasion by back country hikers. Accordingly, the Tuckup Corridor is adopted in a configuration which involves less area and which avoids noise-sensitive areas to the extent possible.

DOI, while agreeing that a corridor would improve safety for transient operations, opposed the use of the Tuckup Corridor for air tour flights. FAA believes that the transit of commercial air tour operations in the area can be safely accommodated by other measures, and will not authorize air tour routes through the corridor.

Width of the flight corridors. FAA proposed a corridor width of 4 miles, in contrast to the 2-mile width recommended by DOI. Many commenters objected to the wider corridors because of the corresponding reduction in the size of the flight-free zones, and the fact that aircraft would be somewhat closer to the noise-sensitive areas that DOI was seeking to protect. One tour operator supported the 2-mile-wide corridors, but virtually all other aviation commenters supported a width of 4 miles, or in several cases 5 or 8 miles. Commenters acknowledged that air tour pilots familiar with the canyon would have no difficulty navigating a 2-mile corridor, but argued that clouds, turbulence, and other weather conditions made it a practical necessity to have room to maneuver. Commenters representing transient pilot operations favored 4-mile or wider corridors because of the difficulty of locating a 2-mile-wide corridor over the canyon terrain.

Because air tour operations can normally be navigated within a 2-mile-wide corridor, the FAA is adopting corridors that will be 2 miles wide from the floor to 10,500 feet MSL and 4 miles wide from 10,500 feet MSL to 14,499 feet MSL. In general, 10,500 feet MSL is the lowest altitude that may be used by transient operations in the corridors and 9,500 feet MSL is the highest used by air tour operators. Air tour operators will be authorized to deviate from their routes if necessary to maintain safety of flight, but in general must operate within the 2-mile corridors.

The flight corridors will be charted as 4 miles wide with a floor of 10,500 feet MSL, since the charts are intended for the use of transient and general aviation operations. The 2-mile-wide corridors at lower altitudes will be included in tour operator operations specifications but will not otherwise be charted.

V. *Minimum flight altitudes.* A number of comments were received on DOI's and FAA's respective designations of rim level elevations in various sections of the Grand Canyon. In the NPRM, the FAA found that the rim level was slightly lower than the DOI recommended figures in 3 of the 4 sectors of the canyon. However, the DOI figures were adopted as minimum flight levels in all cases except between Toroweap and Supai Point, where the FAA level of 6,500 feet MSL was adopted in lieu of the DOI figure of 7,500 feet MSL.

A number of commenters objected to the FAA proposal for permitting flights below the canyon rim. Since the FAA proposal did not, in fact, propose to allow flights below the rim, the FAA assumes the commenters were reacting to some other party's characterization of the proposal and not to the FAA document itself.

Many commenters supported the higher DOI elevations, and two commenters requested levels higher than recommended by DOI in the Marble Canyon and west canyon areas. Aviation commenters supported the FAA rim level designations or, in some cases, altitudes lower than designated by the FAA, and requested that minimum flight altitudes be set at the designated rim level.

The FAA continues to believe that the rim level elevations proposed in the NPRM, with one change, are appropriate for aviation purposes. The exception is the area north of Boundary Ridge, where DOI found the rim level to be 6,000 feet MSL and FAA found it to be 5,500 feet MSL. One commenter noted, correctly, that the terrain slopes downward to the north along Marble Canyon, and that the area is more appropriately divided into two zones—6,000 feet MSL from Boundary Ridge to North Canyon; and 5,000 feet MSL from North Canyon to Lees Ferry. The FAA agrees with the comment, and the rim level determination is revised accordingly.

The higher altitudes recommended by DOI are adopted as minimum flight altitudes, without regard to rim elevation, with two exceptions. First, as proposed in the NPRM, the minimum flight altitude between Toroweap and Supai Point is 6,500 feet MSL rather than the 7,500 feet MSL recommended by DOI. This is in recognition of the lower terrain elevation in this area and the need for an additional flight stratum to safely accommodate air tour, transient, and river runner pickup operations that occur in this part of the canyon.

Second, a minimum flight altitude of 5,000 feet MSL is established for the area between North Canyon and Lees Ferry. Rim level elevation in this area varies from approximately 3,500 feet MSL to 5,000 feet MSL, and a minimum flight altitude higher than 5,000 feet MSL would interfere with safe access to Cliff Dwellers Lodge and Marble Canyon Airports. As it is, special procedures will be necessary to permit operations below "rim" level to land and take off at these airports. The minimum flight altitude of 6,000 feet MSL between Boundary Ridge and North Canyon is adopted as recommended.

VI. *Flight Restrictions: General.* In general, commenters supported the restrictions recommended by DOI and proposed by the FAA—basically, no flights below minimum flight levels or within the flight-free zones except for certain operations necessary for emergency services, park maintenance, and access to Indian reservation lands. The FAA is adopting the general restrictions as proposed in the NPRM, with certain exceptions based on requests that specific provisions apply in certain circumstances or certain area of the SFRA.

Helicopters. Helicopter operators and pilots commenting on the proposal made a number of requests for special provisions in the rule or associated procedures, including a revised Shoshone Point Corridor to the east of the corridor proposed by the FAA; 2-way traffic in flight corridors at the same altitude for helicopters; and designation of the lowest available altitudes for helicopters. As discussed above under "Flight Corridors," a Shoshone Point Corridor was rejected in favor of revisions to the Dragon Corridor and special procedures in the Grand Canyon Airport traffic area.

Two-way traffic at the same altitude is generally not permitted under the procedures adopted, in consideration of the general value of separating opposite-direction traffic and the narrowness of the corridors recommended by DOI. However, there is a safety benefit for helicopters, in that this procedure permits them to cross the canyon and return to the south rim without the necessity of crossing the north rim. The high terrain of the north rim presents an obstacle, particularly to aircraft whose performance begins to degrade at that altitude, and this procedure avoids one-way traffic toward the north rim at low altitude. The adopted procedure also will permit helicopter air tour operators to use a discrete altitude during all phases of flight on operations from Tusuyan, thereby avoiding potential conflict with fixed-wing traffic.

Accordingly, the FAA will specify 2-way same-altitude traffic only for helicopter air tour operations and only for operations to, from, and in the Dragon Corridor and Zuni Point Corridor. This procedure may be conducted safely due to the low airspeed and high visibility of helicopters, and due to the fact that the procedure will be authorized for only 2 commercial operators (at present) whose pilots are experienced with the operation and are in continuous communication on a common radio frequency.

The lowest available flight altitude in the part of the canyon traversed by the Dragon Corridor is 7,500 feet MSL. Fixed-wing tour flights will be entering the corridor only from the north, over the north canyon rim, and, therefore, will be at altitudes of at least 8,500 feet MSL. Accordingly, the altitude of 7,500 feet MSL is available for helicopter tours in the Dragon Corridor. It should be noted that this procedure will contain helicopter tours totally within an area and at an altitude specified for air tours in the original DOI recommendations.

Winter operations in the vicinity of the north rim. The Bright Angel Flight-Free Zone recommended by DOI, and adopted by the FAA, requires flights that now operate over the canyon to operate over the high terrain of the canyon's north rim area. Both fixed-wing and helicopter operators noted that clouds and low visibility above the north rim in the winter season make winter operation above that area undesirable. These operators urged that the FAA adopt a winter procedure permitting tour flights to operate at the same altitudes but slightly south of the north rim over the canyon, to avoid the terrain in low-visibility conditions. The commenters noted that, at that time of year, the north rim is inaccessible and the canyon floor is virtually unused; therefore, there is no noise impact of operations above the canyon for that limited time.

The National Park Service has noted that operations south of the north rim, over the canyon, would have a noise impact on the south rim, which is used throughout the year. Accordingly, NPS opposes the adjusted winter route through the canyon. Therefore, the FAA is not formally adopting a different procedure for winter tour operations. The FAA notes that the rule provides for deviations from the route, for purposes of safety, where unforeseen weather conditions prevent continued legal VFR operation on the approved route.

Provisions for general aviation/transient flights. Several general aviation commenters suggested that the plan recommended by DOI was discriminatory toward general aviation, because the 14,500-foot MSL ceiling of the flight-free zones effectively eliminated most general aviation aircraft from the area. The FAA agrees that that is the effect of the recommended ceiling. However, while the flight-free zones do interfere with flight through the area, the longer flight routes that result do not present a safety problem. Accordingly, the FAA has adopted the flight-free zones to the altitude recommended even though many aircraft will not be able to operate over the tops of the zones.

Several commenters requested that general aviation operators have access to the SFRA equivalent to that of commercial air tour operators, although not necessarily in the same airspace. Some tour operators specifically requested that general aviation and air tour flights be assigned separate altitudes and/or routings.

The final rule adopted provides a high degree of access for transient flight through the area, at altitudes that will keep transient and commercial tour operators in separate airspace. Within the flight-free zones, general aviation operations are subject to the same restrictions as commercial tour operations. Outside of the flight-free zones, the rule adopted provides separate altitudes for the use of commercial air tour aircraft and transient aircraft in the four flight corridors and in most other areas. The FAA estimates that approximately 85% of the flights through the SFRA are commercial air tours, using specific procedures approved by the FAA Flight Standards District Office. Transient pilots cannot in all cases be expected to navigate the corridors with the precision of the air tour pilots, or to be as familiar with potential emergency landing sites. The FAA continues to believe, therefore, that assignment of the lower flight altitudes to the air tour operators and the next higher altitudes to transient operators is a fair and reasonable allocation of the limited airspace available.

Both air tour and transient flight altitudes have been adjusted upward as a result of the higher minimum flight altitudes recommended by DOI. The minimum altitudes that may be provided for tour operators in their operations specifications are as discussed above under "Minimum Flight Altitudes." Minimum altitudes for transient operations are 8,000 feet MSL west of Diamond Creek; 9,000 feet MSL from Diamond Creek to Supai Point: 10,000 feet MSL from Supai Point to Boundary Ridge; and the same as for tour operations from Boundary Ridge to Lees Ferry (6,000 feet MSL south of North Canyon and 5,000 feet MSL north of North Canyon). Minimum altitudes charted will be those applicable to transient operations.

Above these altitudes, and outside of corridors and flight-free zones, transient operations are not restricted to any particular route while in the SFRA. The FAA specifically requests comments on whether the rules adopted provide sufficient access through the area for transient operators, and at the same time provide sufficient separation of transient and air tour operations.

Flights to and over areas outside the Grand Canyon National Park. DOI recommended a SFRA similar to that in effect under SFAR 50-1, which includes areas outside of the National Park boundaries. Comments were received from the two Indian tribes whose reservations are partly within the SFRA, and from the Bureau of Land Management (BLM) of the Department of the Interior, which administers land north of the Grand Canyon. Legal counsel for the Havasupai Tribe objected to the routing of tour flights over the reservation that results from the prohibition of flights over the Park. The tribe requested continued air access to the reservation for limited purposes within the control of the tribe.

The Truxton Canyon Agency of the Bureau of Indian Affairs, on behalf of the Hualapai Indian Tribe, objected to any limitation on flights above the Hualapai Reservation for purposes of the management objectives of the Grand Canyon National Park. The tribe requested unrestricted air access to the reservation for flights sanctioned by the tribe. BLM commented that inclusion of its lands within the SFRA, under the restrictions contained in the proposal, would adversely affect the ability of BLM and other affected Federal agencies to meet mandatory management responsibilities.

With respect to tour routes over the Havasupai Reservation, the FAA does not anticipate that tour routes under the rule adopted will be significantly different from those currently in use over the reservation area. However, the FAA invites tribal representatives to contact the Flight Standards District Office to provide information on areas of the reservation in which the tribe objects to overflights. To the extent practically consistent with safety, these preferences will be incorporated in the tour routes specified in the operators' operations specifications.

On the issue of aerial access to lands within the SFRA, it is the intent of the FAA to ensure access to lands outside of the Grand Canyon National Park at the discretion of the landowner or responsible land administration agency. Aircraft operated by or under contract to the tribe or agency will have access to all points within the affected lands, under an authorization issued by the Flight Standards District Office. The authorization would normally specify direct entry and exit routes and would limit flights within flight-free zones to those necessary. Agencies such as BLM and the U.S. Forest Service, with aerial surveillance responsibilities, would be authorized for general unrestricted overflight by agency or contractor aircraft.

Limitation on the number of tour flights. Several commenters suggested that FAA limit the number of flights in the vicinity of the Park, either as a means of reducing aircraft noise or as a solution to the safety problems discussed in the NPRM. DOI did not include a recommendation to limit or reduce the number of flights, and the FAA does not find any independent justification for such a program, which would be difficult to administer. Also, a reduction in the number of flights (short of a total ban, which was not contemplated by Congress or DOI) is not an adequate solution to the safety problems identified.

Access to GCN. Several aviation commenters objected to any restriction on access to Grand Canyon National Park Airport. The Bright Angel Flight-Free Zone recommended by DOI creates a 7,000 foot barrier 5 miles north of the airport, from approximately the 300° radial on the northwest to the 070° radial on the northeast. The restriction on access to the airport from the north was intended by DOI, to provide noise mitigation to the south rim overlooks and the heavily used areas of the central canyon. To the extent the recommended restriction was an inconvenience for aircraft arriving from the north (or on air tours from the west), but not unsafe, Public Law 100-91 required that the recommendation be adopted without change.

The safety problem with the recommendation identified by the FAA was not with the existence of the flight-free zone itself, but rather with the side-effect of requiring all arriving traffic to approach the airport from the remaining unrestricted quadrants. In actuality, virtually all arriving traffic comes from Las Vegas or other points to the west. Deprived of the option of circling over the canyon and approaching the airport from the northeast, on a straight-in approach to Runway 21, these flights will enter the airport traffic area from the west side. The airspace used by these arrivals is limited on the north by the 300° radial, which defines the Bright Angel Flight-Free Zone, and on the south by the departure traffic taking off from Runway 21 (approximately the 210° radial). Usable altitudes are similarly limited by the high terrain.

The Shoshone Point Corridor proposed by the FAA in Notice 88-3 would be a simple and effective solution to this situation. However, in view of objections to the corridor by DOI and many public commenters, due to its potential noise impact on the central canyon area, the FAA has adopted an alternate solution. First, as discussed above, the Dragon Corridor will be reconfigured to bring fixed-wing tour aircraft into the airport traffic area over the Hermits Rest area.

Second, special procedures will be applied for commercial operators approaching the Grand Canyon Airport. Each commercial operator authorized to conduct air tours in the SFRA will be required to enter into a letter of agreement with the Grand Canyon Air Traffic Control Tower for arrival and departure procedures. The operator's operations specifications will incorporate this requirement and incorporate the resulting agreement by reference. The procedures thus established will not be burdensome for operators, but will ensure that (i) arriving flights contact the tower in advance of arriving at the airport traffic area, for sequencing; (ii) arriving flights will be distributed in a pattern that permits efficient handling by the tower; and (iii) there is no conflict between arrival and departure patterns.

Because transient operations are a relatively small portion of total Grand Canyon Airport operations, no special procedures will be established for transient arrivals at this time. However, if the need arises, the FAA may establish such procedures in the future.

Airways/IFR. In the NPRM, the FAA proposed to apply the recommended restrictions to Instrument Flight Rules (IFR) operations, but deferred a decision on the relocation of Federal Airways that currently cross the Grand Canyon. Many commenters supported the DOI recommendations and urged that the airways be moved. Aviation commenters generally requested that the airways be retained and that IFR operations not be affected by new rules. Some of these commenters felt strongly that surface exposure to aircraft noise (at altitudes of more than 9,000 feet MSL or 7,000 feet above the surface) did not justify elimination of IFR operations through the area.

DOI has affirmed its interest in relocation of the airways to avoid overflight of certain areas of the Grand Canyon National Park. The FAA is not rejecting the recommendation, but is unable to alter the airway structure within the time frame required for this rulemaking by Public Law 100-91. In order to revise the airway structure as requested, the FAA will need to determine whether alternate airways can meet IFR traffic needs in this area. If not, relocation of the airways would require that FAA develop and flight-check alternate routes off existing VOR stations and/or establish one or more additional VOR stations to support new airways.

Not all routes between facilities in this area are available, because terrain and magnetic disturbances render signals unusable. Accordingly, the FAA is unable to determine the feasibility of relocating all airways as requested. At this time, however, the FAA intends to begin processing three new airways: (i) between the Page VOR and Tuba City VOR, to provide a low-altitude alternate to Airway V-293 that does not pass through the SFRA; (ii) between Tuba City VOR and Grand Canyon VOR with a slight dogleg to the south to avoid the Desert View Flight-Free Zone; and (iii) between Peach Springs VOR and St. George VOR.

In the interim, the FAA has adopted a regulation that is applicable to IFR operations, with an exception for pilots who are complying with ATC instructions. This provision is intended primarily to permit the descent through 14,500 feet MSL by aircraft approaching Las Vegas, and under the control of Las Vegas Approach Control. Descents would normally not be below 14,500 feet until west of Rent Intersection.

The rule would require transient IFR operations using one of the 3 airways through the area to remain at altitudes of 14,500 feet MSL or higher. Aircraft unable to use these altitudes would be required to file for a different route to avoid the SFRA. The effective date of the applicability of the rule to IFR operations will be April 6, 1989, to permit time for the alternate airways to be established. The delayed effective date will have little environmental impact because of the small number of transient low-altitude IFR operations through the area in the winter months.

Military operations. The Department of the Air Force, through the Representative to the FAA Western Pacific Region, concurred with the general purpose and concept of the DOI recommendations, but noted specific problems for the Air Force that would result. Specifically, the SFRA and flight-free zones would prohibit or require modification of several low-level military training routes through the area. These routes generally pass along the edge of the canyon area and not over central or especially noise-sensitive locations. The Air Force requested an exemption or waiver of the rules to permit some degree of military training on or near existing routes.

It is FAA's understanding that DOI is in agreement that some level of military training on the periphery of the regulated area is highly important to the military and will have no significant effect on noise levels in the Park. Accordingly, the FAA is in the process of discussions with DOI and the Air Force on the Air Force's request.

Weather deviations. Several commenters, including both helicopter and fixed-wing aircraft operators, noted the special problems with operating an aircraft in the canyon area presented by weather conditions characteristic of the area. Examples cited were strong gusty winds and thermals; thunderstorms and rain squalls; and in winter, snow squalls and low visibility. In the absence of flight restrictions, pilots have the flexibility to maneuver to avoid unforeseen conditions. SFAR 50-1 substantially retained this flexibility by permitting flight on an east-west route above the central canyon area. The restrictions recommended by DOI, by eliminating the east-west route and requiring most flights to cross the north rim, and by restricting flights to 2-mile-wide flight corridors, greatly reduce the ability of pilots to avoid weather conditions.

The FAA has essentially adopted the configuration of the flight-free zones and flight corridors recommended by DOI, and there will be no east-west flight route over the canyon area below 14,500 feet MSL. The rule maintains safety in two ways. First, helicopter air tours will be permitted to reverse direction in the Dragon Corridor and return to the south rim at the same altitude, avoiding the necessity of climbing over the north rim. Second, the rule provides that pilots may deviate from course to maintain safety of flight in the avoidance of other aircraft or unsafe weather conditions.

VII. *Public process.* Several commenters objected to the relatively brief comment period (24 days) and to the issuance of the notice only one day prior to the hearings. The expedited rulemaking timetable in this case was necessitated by the relatively brief time period provided by Public Law 100-91. Notice of the public meetings was provided by publication in the *Federal Register*, on February 8, as early as the reservation of facilities could be confirmed. Also, the comment period was open as long as possible before the next agency action was required under Public Law 100-91, on March 28.

VIII. *Effective date.* Several commenters requested that the effective date of the final rule be delayed until September or October 1988, to avoid a substantial change in the tour routes and procedures in the middle of the busy summer season.

The FAA agrees that a changover in the tour routes and transient procedures in the summer would not be consistent with safety. Also, the next sectional aeronautical chart that includes the Grand Canyon area will not be published until late September, so it would not be feasible to provide notice to transient pilots of the new procedures before that time. It would be unacceptable from a safety standpoint to implement a substantial change in flight procedures before the new procedures could be shown on charts.

Finally, the implementation of certain aspects of the regulation adopted will require additional time. Each of the tour operators will need to submit to the Flight Standards District Office its proposed tour routes under the new rules. The FSDO must then reconcile the routes and, in coordination with the operators, determine the final tour routes that will be specified in each operator's operations specifications. Also, each of the major tour operators will be required to enter into a letter of agreement with the Grand Canyon Airport Control Tower. Development of the letters of agreement cannot be made final until operators are relatively certain of the details of their respective tour routes. Accordingly, both the FSDO and the air traffic personnel will benefit from the time to develop adequate procedures.

In consideration of the above, the FAA is making the regulation effective on September 22, 1988, coincident with publication of the sectional chart including the new regulations and procedures. As noted above, the effective date for applicability of the rule to IFR operations will be April 6, 1989.

THE SPECIAL FEDERAL AVIATION REGULATION

In consideration of the comments received in response to Notice 88-3, and after extensive consultation with the Office of the Secretary of the Interior in accordance with Section 3.(b)(2) of Public Law 100-91, the FAA is adopting an amendment to Special Federal Aviation Regulation (SFAR) 50-1 to implement recommendations submitted by the Department of the Interior pursuant to Section 3.(b)(1) of that law. To the extent the rule adopted varies from the DOI recommendations, the FAA has sought to develop alternative measures which are acceptable to DOI and which promote the purposes of Public Law 100-91. DOI has participated in this effort, and the final rule has received the general approval of the Office of the Secretary of the Interior. In summary, the amendments will do the following:

1. Raise the ceiling of the Grand Canyon National Park Special Flight Rules Area from 9,000 feet MSL to but not including 14,500 feet MSL. The restrictions that apply in the airspace will be essentially as requested by DOI.

2. Alter the boundaries of the existing Special Flight Rules Area to include the northeast extension of the canyon to Lees Ferry.

3. Prohibit operation by aircraft below certain minimum altitudes, with specific exceptions that provide for the limited exceptions contained in Public Law 100-91: (a) NPS administrative flights; (b) flights required for the transportation of persons and supplies to and from Supai Village and the lands of the Havasupai Indian Tribe of Arizona, and (c) flights that operate on a direct route between a point on the North Rim outside of the Park and locations on the Hualapai Indian Reservation (as designated by the tribe) and whose sole purpose is transporting individuals to or from boat trips on the Colorado River and any guide of such a trip.

Minimum allowable flight altitudes in each of 5 sectors of the canyon are (1) 5,000 feet MSL for the eastern section from Lees Ferry to North Canyon; (2) 6,000 feet MSL from the North Canyon to Boundary Ridge, where the Grand Canyon visibly begins to widen; (3) 7,500 feet MSL from Boundary Ridge to Supai Point (Yumtheska Point); (4) 6,500 feet MSL from Supai Point to Diamond Creek; and (5) 5,000 feet MSL for the western section from Diamond Creek to the Grand Wash Cliffs.

Higher minimum flight altitudes are specified for transient general aviation operations outside of flight-free zones and flight corridors between Grand Wash Cliffs to Boundary Ridge: (1) 10,000 feet MSL from Boundary Ridge to Supai Point (Yumtheska Point); (2) 9,000 feet MSL from Supai Point to Diamond Creek; and (3) 8,000 feet MSL for the western section from Diamond Creek to the Grand Wash Cliffs.

4. Prohibit operation in four "flight-free zones" unless necessary for the purposes enumerated in paragraph 3 above for flight below minimum flight altitudes. The flight-free zones are:

(a) *Desert View Flight Free-Zone.* An area around the Desert View Overlook. The area between the Desert View and Bright Angel/Shinumo Flight-Free Zones is designated the "Zuni Point Corridor."

(b) *Bright Angel Flight-Free Zone.* An area substantially identical to the Bright Angel Flight-Free Zone recommended by DOI.

(c) *Shinumo Flight-Free Zone.* An area substantially identical to the Shinumo Flight-Free Zone recommended by DOI. The Dragon Corridor would be in the same location as the central flight corridor recommended by DOI, but would be widened at the north end and would incorporate an additional routing from the Colorado River southeast over Hermits Rest.

(d) *Toroweap/Thunder River Flight Free Zone.* An area nearly identical to the Toroweap/Thunder River Flight-Free Zone recommended by DOI, except for an additional north-south flight corridor west of Havasu Canyon. ("Tuckup Corridor"). The flight corridor between the Bright Angel/Shinumo and Toroweap/Thunder River Flight-Free Zones ("Fossil Canyon Corridor") would be retained substantially as recommended by DOI.

A total of four corridors for aircraft flight above minimum flight altitudes are provided through or between the zones. The description of the zones in some cases has been modified to use aviation terminology and references to navigation aids, where possible. Except for the Tuckup Corridor west of Havasu Canyon, and the modifications to the Dragon Corridor, the boundaries and area coverage of the zones are essentially as recommended by DOI.

5. Specify routes and altitudes for operation in the four corridors between and through the flight-free zones and outside of the zones. The procedures replace the transient routes contained in SFAR 50-1.

6. Retain the existing prohibition on flight closer than 500 feet to any terrain or structure in the canyon, except when necessary or when specifically authorized for certain purposes.

7. Retain the existing requirement to monitor a common frequency in each sector of the canyon. The requirement for air tour operators and othe specially authorized flights to make position reports is deleted from the rule as unnecessary, because it is included in the authorizations for these operators.

Comment period

This action is a final rule. However, because the rule includes specific details that were discussed only by general subject in the notice, a comment period is being provided. Comments received will be used in any consideration of future changes to the rule. Comments on the rule are due by August 1, 1988. Comments may be sent to the address listed under "ADDRESSES" above.

ENVIRONMENTAL REVIEW

An environmental assessment of the rule adopted and a Finding of No Significant Impact have been placed in the rules docket. In summary, the assessment concluded that, as a result of the rule adopted, certain areas of the Grand Canyon will receive less aircraft noise than under existing regulations, and others, in particular the Hermits Rest area of the south canyon rim, would receive a slight increase in perceived aircraft noise. However, in consideration of the volume of traffic, the altitude of flight routes, and the noise characteristics of the aircraft typically used in canyon flights, the FAA has determined that no significant environmental impact will result from the new rules.

ECONOMIC EVALUATION

The Department of the Interior, in developing the recommendations submitted under Public Law 100-91, prepared a cost-benefit analysis of the proposal. This analysis was submitted with the DOI recommendations on December 29 and has been included in the FAA public docket for this rulemaking. The DOI analysis concluded that, on balance, in view of the minimal cost expected to the air tour operators and the significant benefits to park resources and visitors, the rules recommended by DOI would be cost-beneficial.

FAA Evaluation

The FAA does not have quantitative information that would tend to either support or alter the conclusions of the DOI analysis. Several air tour operators commented that the DOI recommendations, if implemented, would have an adverse economic effect on their business.

The FAA may not consider economic impact in this rulemaking. Accordingly, comments on the economic impacts of the regulation have been included in the docket but have not been addressed.

Regulatory Flexibility

The Regulatory Flexibility Act of 1980 requires agencies to identify rules that will have a significant economic impact on small entities, including small businesses. The annualized threshold of significant economic impact for a Part 135 air taxi with 9 or fewer aircraft is considered by the FAA to be $3,700 (in 1986 dollars). On information currently available, the FAA cannot certify that the rule would not have a significant effect on a substantial number of small entities. However, the FAA has not conducted a regulatory flexibility analysis of the rule because the provisions of Public Law 100-91 preclude the adoption of alternative measures.

For the reasons set forth above, the FAA has determined that this amendment (1) is not a major rule under Executive Order 12291, and (2) is not considered significant under Department of Transportation Regulatory Policies and Procedures (44 FR 11024, February 26, 1979).

Federalism Determination

The amendment set forth herein would not have substantial direct effects on the states, on the relationship between the national government and the states, or on the distribution of power and responsibilities among the various levels of government. The regulations set forth in this notice would be promulgated pursuant to the authority in the Federal Aviation Act of 1958, as amended (49 U.S.C. 1301, *et seq.*), which has been construed to preempt state law regulating the same subject. Therefore, in accordance with Executive Order 12612, it is determined that this regulation does not have federalism implications warranting the preparation of a Federalism Assessment.

ADOPTION OF THE SPECIAL FEDERAL AVIATION REGULATION

For the reasons set out above, 14 CFR Parts 91 and 135 are amended by redesignating Special Federal Aviation Regulation No. 50-1 as Special Federal Federal Aviation Regulation 50-2 and revising it effective September 22, 1988.

The authority citation for Part 135 continues to read as follows:

Authority: 49 U.S.C. 1354(a), 1355(a), 1421 through 1431, and 1502; 49 U.S.C. 106(g) (Revised Public Law 97-449, January 12, 1983).

Special Federal Aviation Regulation 50-2
(Amended)

Special Flight Rules in the Vicinity of the Grand Canyon National Park

Adopted: September 20, 1988 **Effective: September 22, 1988**

(Published in 53 FR 36946, September 22, 1988)

SUMMARY: On June 2, 1988, the FAA published a final rule that will restrict aircraft flights within a special flight rules area in the vicinity of the Grand Canyon National Park. This action amends the final rule to provide that commercial operators that provide air tours in the Special Flight Rules Area will continue their current tour routes through October 31, 1988. The extended time before the transition to the new tour routes will enhance safety by providing additional time for pilot training and certification. This amendment only delays the transition to the new routes by the commercial tour operators and does not affect the other portions of the rule which restrict operations by all other classes of operators other than commercial tour operators.

FOR FURTHER INFORMATION CONTACT:

David L. Bennett Office of the Chief Counsel, AGC-230, Federal Aviation Administration, 800 Independence Avenue, SW., Washington, DC. 20591, Telephone: (202) 267-3491.

SUPPLEMENTARY INFORMATION:

On May 27, 1988, the FAA issued Special Federal Aviation Regulation (SFAR) 50-2 (53 FR 20264, June 2, 1988), a special federal aviation regulation revising prior flight regulations in the vicinity of the Grand Canyon National Park. SFAR 50-2 substantially adopted the recommendations of the Secretary of the Interior, submitted to the FAA in accordance with Section 3 of Public Law 100-91.

In summary, SFAR 50-2: (1) Establishes a Special Flight Rules Area from the surface to but not including 14,500 feet MSL in the area of the Grand Canyon; (2) prohibits flights below a certain altitude in each of five sectors of this area, with certain exceptions; (3) establishes flight-free zones from the surface to 14,500 feet MSL above large areas of the Park; (4) provides for routes for commercial tour operators and transient operators through the canyon area; and (5) retains certain existing terrain avoidance and communications requirements for flights in the area.

When SFAR 50-2 was published, the FAA requested comments on the final rule to provide interested persons an additional opportunity to comment on the details of the rule adopted.

By letter dated August 24, 1988, Scenic Airlines, Inc., and thirteen other operators, petitioned the Federal Aviation Administration (FAA) for exemption from Special Federal Aviation Regulation (SFAR) SFAR 50-2 to extend the effective date of the regulation from September 22, 1988 to November 15, 1988. Other operators also submitted petitions to postpone the effective date of the rule to November 15, 1988.

Petitioners stated that the tour industry had no advance notice of the route changes under SFAR 50-2. The petitioners further stated that the majority of tour operators in the area will be unable to complete the training of their pilots by the effective date of the rule as originally proposed. Due to the inability of the tour operators to conduct the necessary training, the operators will not be able to satisfy the required FAA route checks in accordance with the operations specifications in order to operate in the Special Flight Rules Area within the Grand Canyon airspace by September 22, 1988.

The pilot training on the new routes is being conducted while the old routes are being flown by the commercial tour operators. The petitioners have expressed concern that the use of the two different routes simultaneously may cause conflicting traffic. They point to the fact that commercial tour operation traffic is quite heavy now, but should lighten in the next few months. Therefore, the extension of the time in which the new routes become effective will permit the pilots to train on the new routes in an environment where the air traffic will be less heavy, thereby minimizing any potentially, conflicting traffic.

Based on the representations by the petitioners as to the number of flights planned during September and October, the FAA finds that safety would be significantly enhanced by an extension of the time available for operators to prepare and train on the new routes in a period of decreased traffic, prior to the transition of these routes as required by SFAR 50-2. Therefore, for commercial air tour flights conducted in the Special Flight Rules Area in accordance with 14 CFR Part 135 operations specifications, the FAA agrees that a delay of the implementation of the new tour routes until November 1, 1988, is in the public interest. However, those operators must continue to operate in accordance with the operations specifications issued under SFAR 50-1 until November 1, 1988.

THE RULE

This amendment amends Section 3(c) of SFAR 50-2 relating to those Part 135 operators whose operations specifications authorize air tour flights within the Grand Canyon National Park Special Flight Rules Area. The effect of the rule is to delay the transition to new tour routes under SFAR 50-2 for such operators until November 1, 1988.

In order to obtain the safety benefits of the delay in implementation of the new tour routes under SFAR 50-2, this amendment must be issued prior to September 22, 1988. This does not allow time for publication of a notice for proposed rulemaking and for a comment period. For this reason, I find that notice and public procedure under 5 U.S.C. 553(b) are impracticable and contrary to the public interest. For the same reasons, I find that good cause exists for making this amendment effective in less than 30 days.

ENVIRONMENTAL ASSESSMENT

An environmental assessment of SFAR 50-2 and a Finding of No Significant Impact have been placed in the rules docket. As this amendment simply delays briefly the implementation date for the tour operators in the areas of the Grand Canyon, the FAA has determined that no significant environmental impact will result from the new rules.

ECONOMIC EVALUATION

The Department of the Interior, in developing the recommendations submitted under Pub. L. 100-91, prepared a cost-benefit analysis of the proposal. This analysis was submitted with the DOI recommendations on December 29 and has been included in the FAA public docket for SFAR 50-2. The DOI analysis concluded that, on balance, in view of the minimal cost expected to the air tour operators and the significant benefits to park resources and visitors, the rules recommended by DOI would be cost-beneficial. This amendment does not affect that assessment.

REGULATORY FLEXIBILITY

The Regulatory Flexibility Act of 1980 requires agencies to identify rules that will have a significant economic impact on small entities, including small businesses. The annualized threshold of significant economic impact for a Part 135 air taxi with 9 or fewer aircraft is considered by the FAA to be $3,700 (in 1986 dollars). For reasons discussed in the preamble to SFAR 50-2, the FAA cannot certify that SFAR 50-2 rule would not have a significant effect on a substantial number of small entities. The FAA has not conducted a regulatory flexibility analysis of the proposed rule because the provisions of Pub. L. 100-91 preclude the adoption of alternative measures.

For the reasons set forth above, the FAA has determined that this proposed amendment (1) Is not a major rule under Executive Order 12291, and (2) is not considered significant under Department of Transportation Regulatory Policies and Procedures (44 FR 11024; February 26, 1979).

FEDERALISM DETERMINATION

The amendment set forth herein would not have substantial direct effects on the states, on the relationship between the national government and the states, or on the distribution of power and responsibilities among the various levels of government. Therefore, in accordance with Executive Order 12612, it is determined that this regulation does not have federalism implications warranting the preparation of a Federalism Assessment.

For the reasons set out above, the Federal Aviation Administration is amending 14 CFR Parts 91 and 135 effective September 22, 1988.

The authority citation for Part 135 continues to read as follows:

Authority: 49 U.S.C. 1354(a), 1355(a), 1421 through 1431, and 1502; 49 U.S.C. 106(g) (Revised Pub. L. 97-449, January 12, 1983).

Special Federal Aviation Regulation 50-2

Special Flight Rules in the Vicinity of the Grand Canyon National Park

Adopted: March 17, 1989 **Effective: April 6, 1989**

(Published in 54 FR 11926, March 22, 1989)

SUMMARY: In May 1988, the FAA issued a final rule for the operation of aircraft in the airspace above the Grand Canyon up to an altitude of 14,500 feet above mean sea level (MSL), with an effective date of September 22, 1988. The regulations were adopted to comply with recent legislation requiring additional flight regulations based on the recommendations of the U.S. Department of the Interior. The FAA requested comments on the final rule at the time it was published. This action establishes a corridor into the airport on the Hualapai Indian Reservation and simplifies the configuration of a flight corridor in the vicinity of Dragon Butte in the central canyon.

FOR FURTHER INFORMATION CONTACT: David L. Bennett Office of the Chief Counsel, AGC-230, Federal Aviation Administration, 800 Independence Avenue, SW., Washington, D.C. 20591; Telephone: (202) 267-3491.

SUPPLEMENTAL INFORMATION:

Availability of Document

Any person may obtain a copy of this document by submitting a request to the Federal Aviation Administration, Office of Public Affairs, APA-200, 800 Independence Avenue, SW., Washington, D.C. 20591; or by calling (202) 267-3479. Communications must identify the special rule number of the document.

Background

On May 27, 1987, the FAA issued SFAR 50-2 (53 FR 20264, June 2, 1988), a special federal aviation regulation revising prior flight regulations in the vicinity of the Grand Canyon National Park. SFAR 50-2 substantially adopted the recommendations of the Secretary of the Interior, submitted to the FAA in accordance with Section 3 of Public Law 100-91.

In summary, SFAR 50-2: (1) Establishes a Special Flight Rules Area from the surface to but not including 14,500 feet MSL in the area of the Grand Canyon; (2) prohibits flights below a certain altitude in each of five sectors of this area, with certain exceptions; (3) establishes flight-free zones from the surface to 14,500 feet MSL above large areas of the Park; (4) provides for routes for commercial tour operators and transient operators through the canyon area; and (5) retains local requirements for terrain avoidance and communications established by SFAR 50-1.

When SFAR 50-2 was published, the FAA requested comments on the final rule to provide interested persons an additional opportunity to comment on the details of the rule adopted.

Comments on SFAR 50-2

Five comments were received on SFAR 50-2 during the comment period. Commercial helicopter operators requested that the effective date of the rule be delayed from September 22 to a date in November 1988. The reason given was that air route tour traffic does not drop off significantly from peak summer levels until November. The commenters stated that it would be difficult for tour pilots to train for and transition to a new route structure in the course of high-volume tour operations.

Upon consideration of the comments, the FAA extended the compliance date of SFAR 50-2 for the tour operators until November 1, 1988, in order for the operators to permit their pilots additional time to train on the new routes in a less congested operating environment. The extension was published in the *Federal Register* on September 22, 1988 (53 FR 36946).

Helicopter operators also requested clarification of the altitudes in the Dragon Corridor. In the preamble to the final rule, the FAA noted that helicopters would be assigned the altitude of 7,500 feet MSL in the Dragon Corridor, for both northbound and southbound operations, and that fixed-wing aircraft would enter the corridor from the north at 8,500 feet MSL. The helicopter operators requested specific clarification that fixed-wing operators would not be permitted to descend below 8,500 feet MSL in the corridor.

Fixed-wing air tour operations in the Dragon Corridor will be maintained at an altitude of 8,500 feet MSL, in accordance with restrictions in the operations specifications of the affected operators. Accordingly, no clarification in the regulatory language is necessary.

One helicopter operator commented that the regulated airspace extended far beyond the boundaries of the Grand Canyon National Park, and that the regulation was not required or authorized by Pub.L. 100-91 to that extent. Section 3 of Pub.L. 100-91 refers to the Grand Canyon, rather than Grand Canyon National Park, and the FAA continues to interpret the legislation as authorizing restrictions in areas reasonably necessary to reduce noise impacts on the canyon. In some areas the Special Flight Rules Area (SFRA) boundaries are several miles from the canyon rim, primarily as a result of an effort to simplify the boundary lines and align them with local navigation aids. Operations are not unnecessarily restricted in these areas, however.

The Forest Service of the Department of Agriculture commented that FAA had disregarded its previous comment, filed in March 1988, objecting to the northern boundary of the SFRA. The Forest Service renewed its objection, on the basis that the SFRA restricted operations by the Forest Service and its contractors over lands administered by the Forest Service. The FAA agrees that the Forest Service should have unrestricted air access to all of the lands under its administration. This can be accomplished by authorization from the Las Vegas Flight Standards District Office. The FAA does not agree that it is necessary to amend the northern boundary of the SFRA, however.

One commenter expressed several environmentally oriented concerns about specific provisions of SFAR 50-2. First, while the FAA expressed an intent to afford some protection for Point Imperial, the final rule did not restrict the airspace at that location. The Department of the Interior (DOI), in its recommendations to the FAA, requested a large flight-free zone extending across the canyon north of the North Rim Overlook, but did not recommend a flight-free zone around Point Imperial. With the establishment of the Bright Angel Flight-Free Zone in SFAR 50-2, some air traffic will necessarily be diverted across the Kaibab Plateau. However, the FAA has established tour routes that avoid Point Imperial within a radius of at least one mile.

This commenter further requested that the overall number of tour flights over the Grand Canyon be limited. A reduction in the number of flights would be a complex regulatory undertaking, since flights would need to be regulated from all possible originating airports, and a legally sufficient allocation mechanism would be required for the flights permitted. The benefit to a reduction in flights, in terms of the actual degree of noise reduction which might result, is unknown. For these reasons, the FAA has not adopted a limitation on flights.

The same commenter requested that high-level jet routes be relocated away from the Grand Canyon National Park. The FAA will consider the relocation of jet routes following the 2-year study of aircraft overflight of the park now being undertaken by the National Park Service.

The commenter also requested that the Dragon Corridor be relocated to the west to avoid aircraft noise impacts on the Boucher Trail, Hermit Trail, and Tonto Trail. Alternatively, the commenter recommended that the corridor be closed for part of the year or that traffic levels be restricted in the corridor.

SFAR 50-2 established the Dragon Corridor in the location recommended by DOI, with minor changes to the configuration of the corridor for air navigation purposes. Under the provisions of Pub.L. 100-91, the FAA could not place the corridor in a location different than that recommended by DOI for reasons other than aviation safety, including environmental reasons. Limitations on the use of the corridor were not recommended by DOI, and the FAA does not believe that the imposition of additional restrictions are warranted prior to completion of the 2-year study mandated by Pub.L. 100-91.

However, the National Park Service has requested that the 4-mile-wide corridor at 10,500 feet MSL and above be altered to coincide with the alignment of the lower, 2-mile-wide portion of the corridor between Dragon Butte and Cocopa Point. The original alignment of the upper portion is on a radial off the Page Very High Frequency Omni Range (VOR), to assist transient pilots in navigation through the area. In September 1988, an FAA flight check indicated that the Page VOR signal could not be received below 12,500 feet MSL in the corridor. Because the VOR signal cannot be received in a substantial part of the upper corridor, the FAA believes there is no reason to continue the separate alignments of the upper and lower portions of the corridor. Accordingly, the agency is simplifying the entire corridor to align both the upper and lower portions between the Dragon Butte and Cocopa Point. The width of the corridor at 10,500 feet MSL and above will remain 4 nautical miles.

After the close of the comment period, the Truxton Canyon Agency of the Bureau of Indian Affairs, U.S. Department of the Interior, submitted comments on behalf of the Hualapai Indian Tribe. The Hualapai reservation occupies extensive lands south of the Colorado River adjacent to the Grand Canyon National Park, and the reservation is partly within the SFRA.

The Hualapai Tribe has established a landing strip on the reservation in the west canyon area, on a plateau south of the canyon rim. The current status of the landing strip is private use, although it is the tribe's intention that the airport eventually be accessible to transient pilots to fly in for shopping and tours of the reservation. Because the airport is located in the special flight rules area, and below the minimum flight altitude for the western sector of the SFRA, transient pilots cannot use the airport without special authorization in writing from the FAA Flight Standards District Office. The tribe has complained that this unacceptably restricts public access to the reservation and interferes with the tribe's economic development plans.

Operations in and out of the Hualapai Reservation airport would have no noise or other environmental impacts on the Grand Canyon National Park or on any noise-sensitive areas of the Grand Canyon. The tribe's request to modify the SFRA to permit unrestricted public access to the airport is supported by the National Park Service as well as the Bureau of Indian Affairs. Accordingly, the FAA is revising the southern boundary of the SFRA in the west canyon area to establish a corridor to the Hualapai Reservation airport. Access to the airport will be from the south, and operations at the airport will not be permitted to cross the canyon rim.

Amendment to SFAR 50-2

In consideration of the comments received in response to the request for comments contained in SFAR 50-2, the FAA is adopting an amendment to Special Federal Aviation Regulation (SFAR) 50-2 to:

1. Revise the boundary of the SFRA to provide a corridor for unrestricted access to the airport on the Hualapai Reservation, located south of the canyon rim in the west canyon area.

2. Revise the configuration of the Dragon Corridor to center the upper portion, beginning at 10,500 feet MSL, on the centerline of the lower portion.

This rule is effective less than 30 days after publication in the *Federal Register*, because it relieves a restriction contained in the earlier rule and because an effective date coincident with the effective date of the new Las Vegas Sectional Aeronautical Chart will promote safety.

Environmental Review

An environmental assessment of SFAR 50-2 and Finding of No Significant Impact have been placed in the rules docket. This amendment does not alter the conclusions in that document.

Economic Evaluation

Because the economic impact of this amendment is so minimal, a regulatory evaluation is unnecessary. For the same reason, the FAA certifies that the amendment will not have a significant effect on a substantial number of small entities.

For the reasons set forth above, the FAA has determined that this proposed amendment (1) is not a major rule under Executive Order 12291, and (2) is not considered significant under Department of Transportation Regulatory Policies and Procedures (44 FR 11024; February 26, 1979).

Federalism Determination

The amendment set forth herein would not have substantial direct effects on the states, on the relationship between the national government and the states, or on the distribution of power and responsibilities among the various levels of government. Therefore, in accordance with Executive Order 12612, it is determined that this regulation does not have federalism implications warranting the preparation of a Federalism Assessment.

ADOPTION OF THE SPECIAL FEDERAL AVIATION REGULATION

For the reasons set out above, the Federal Aviation Administration is amending Part 91 and Part 135 of the Federal Aviation Regulations, 14 CFR Parts 91 and 135, by revising Special Federal Aviation Regulation 50-2 effective April 6, 1989.

The authority citation for Part 135 continues to read as follows:

Authority: 49 U.S.C. 1354(a), 1355(a), 1421 through 1431, and 1502; 49 U.S.C. 106(g) (Revised Pub. L. 97-449, January 12, 1983).

Special Federal Aviation Regulation 50-2

Special Flight Rules in the Vicinity of the Grand Canyon National Park, AZ

Section 1. *Applicability.* [This rules prescribes special operating rules for all persons operating aircraft in the following airspace, designated as the Grand Canyon National Park Special Flight Rules Area:

That airspace extending upward from the surface up to but not including 14,500 feet MSL within an area bounded by a line beginning at lat. 36° 09′30″ N., long. 114° 03′00″ W.; northeast to lat. 36° 14′00″ N., long. 113° 09′50″ W.; thence northeast along the boundary of the Grand Canyon National Park to 36° 22′55″N., long 112° 52′00″W.; to lat. 36° 30′30″N., long 112° 36′15″W. to lat. 36° 21′30″N., long 112° 00′00″W. to lat. 36° 35′30″N., long. 111° 53′10″W. to lat. 36° 53′00″N., long. 111° 36′45″W. to lat. 36° 53′00″ N., long. 111° 33′00″ W.; to lat. 36° 19′00′ N., long. 111° 50′50″ W.; to lat. 36° 17′00″ N., long. 111° 42′00″ W.; to lat. 35° 59′30″ N., long. 111° 42′00″ W.; to lat. 35° 57′30″ N., long. 112° 03′55″ W.; thence counterclockwise via the 5 statute mile radius of the Grand Canyon Airport airport reference point (lat. 35° 57′09″ N., long. 112° 08′47″ W.) to lat. 35° 57′30″ N., long. 112° 14′00″ W.; to lat. 35° 57′30″ N., long. 113° 11′00″ W.; to lat. 35° 42′30″ N., long. 113° 11′00″ W.; to 35° 38′30″ N; long. 113° 27′30″W; thence counterclockwise via the 5 statute mile radius of the Peach Springs VORTAC to lat. 35° 41′20″N., long. 113° 36′00″ W; to lat. 35° 55′25″ N., long. 113° 49′10″ W.; to Lat. 35° 57′45″ N., 113° 45′20″ W.; thence northwest along the park boundary to lat. 36° 02′20″ N., long. 113° 50′15″ W; to 36° 00′10″ N., long. 113° 53′45″ W.; thence to the point of beginning.]

Section 2. *Definitions.* For the purposes of this special regulation:

"Flight Standards District Office" means the FAA Flight Standards District Office with jurisdiction for the geographical area containing the Grand Canyon.

"Park" means the Grand Canyon National Park.

"Special Flight Rules Area" means the Grand Canyon National Park Special Flight Rules Area.

Section 3. *Aircraft operations: general.* Except in an emergency, no person may operate an aircraft in the Special Flight Rules Area under VFR on or after September 22, 1988, or under IFR on or after April 6, 1989, unless the operation—

(a) Is conducted in accordance with the following procedures:

NOTE: THE FOLLOWING PROCEDURES DO NOT RELIEVE THE PILOT FROM SEE-AND-AVOID RESPONSIBILITY OR COMPLIANCE WITH FAR 91.79.

(1) Unless necessary to maintain a safe distance from other aircraft or terrain—

(i) remain clear of the areas described in Section 4; and

(ii) remain at or above the following altitudes in each sector of the canyon:

Eastern section from Lees Ferry to North Canyon and North Canyon to Boundary Ridge: as prescribed in Section 5.

Boundary Ridge to Supai Point (Yumtheska Point): 10,000 feet MSL.

Supai Point to Diamond Creek: 9,000 feet MSL.

Western section from Diamond Creek to the Grand Wash Cliffs: 8,000 feet MSL.

(2) Proceed through the four flight corridors described in Section 4 at the following altitudes unless otherwise authorized in writing by the Flight Standards District Office:

Northbound	Southbound
11,500 or 13,500 feet MSL	10,500 or 12,500 feet MSL.

(b) Is authorized in writing by the Flight Standard District Office and is conducted in compliance with the conditions contained in that authorization. Normally authorization will be granted for operation in the area described in Section 4 or below the altitudes listed in Section 5 only for operations of aircraft necessary for law enforcement, firefighting, emergency medical treatment/evacuation of persons in the vicinity of the Park; for support of Park maintenance or activities; or for aerial access to and maintenance of other property located within the Special Flight Rules Area. Authorization may be issued on a continuing basis.

(c) (1) Prior to November 1, 1988, is conducted in accordance with a specific authorization to operate in that airspace incorporated in the operator's Part 135 operations specifications in accordance with the provisions of SFAR 50-1, notwithstanding the provisions of Sections 4 and 5; and

(2) On or after November 1, 1988, is conducted in accordance with a specific authorization to operate in that airspace incorporated in the operator's Part 135 operations specifications and approved by the Flight Standards District Office in accordance with the provisions of SFAR 50-2.

(d) Is a search and rescue mission directed by the U.S. Air Force Rescue Coordination Center.

(e) Is conducted within 3 nautical miles of Whitmore Airstrip, Pearce Ferry Airstrip, North Rim Airstrip, Cliff Dwellers Airstrip, or Marble Canyon Airstrip at an altitude less than 3,000 feet above airport elevation, for the purpose of landing at or taking off from that facility. *Or*

(f) Is conducted under an IFR clearance and the pilot is acting in accordance with ATC instructions. An IFR flight plan may not be filed on a route or at an altitude that would require operation in an area described in Section 4.

Section 4. *Flight-free zones.* Except in an emergency or if otherwise necessary for safety of flight, or unless otherwise authorized by the Flight Standards District Office for a purpose listed in Section 3(b), no person may operate an aircraft in the Special Flight Rules Area within the following areas:

(a) *Desert View Flight-Free Zone.* Within an area bounded by a line beginning at Lat. 35°59′30″N., Long. 111°46′20″W.; to 35°59′30″N., Long 111°52′45″W.; to Lat. 36°04′50″N., Long 111°52′00″W.; to Lat. 36°06′00″N., Long. 111°46′20″W.; to the point of origin; but not including the airspace at and above 10,500 feet MSL within 1 mile of the western boundary of the zone. The area between the Desert View and Bright Angel Flight-Free Zones is designated the "Zuni Point Corridor."

(b) *Bright Angel Flight-Free Zone.* [Within an area bounded by a line beginning at Lat. 35°59′30″N, Long 111°55′30″W.; to Lat 35°59′30″N, Long 112°04′00″ W.; thence counterclockwise via the 5-statute-mile radius of the Grand Canyon Airport point (Lat. 35°57′ 09″ N., Long 112°08′47″W.) to Lat 36°01′30″N., Long. 112°11′00″W.; to Lat. 36°06′15″N., Long. 112°12′50″ W.; to Lat. 36°14′40″N., Long. 112°08′50″ W.; to Lat. 36°14′40″N., Long. 111°57′30″W.; to Lat. 36°12′30″N., Long. 111°53′50″W.; to the point of origin; but not including the airspace at and above 10,500 feet MSL within 1 mile of the eastern boundary between the southern boundary and Lat. 36°04′50″N. or the airspace at and above 10,500 feet MSL within 2 miles of the northwest boundary. The area bounded by the Bright Angel and Shinumo Flight-Free Zones is designated the "Dragon Corridor."]

(c) *Shinumo Flight-Free Zone.* [Within an area bounded by a line beginning at Lat 36°04′00″N., Long. 112°16′40″W.; northwest along the park boundary to a point at Lat. 36°11′45″N., Long. 112°32′15″W.; to Lat. 36°21′15″N., Long. 112°20′20″W.; east along the park boundary to Lat. 36°21′15″N., Long. 112°13′55″W.; to Lat. 36°14′40″N., Long. 112°11′25″W.; to the point of origin. The area between the Thunder River/Toroweap and Shinumo Flight Free Zones is designated the "Fossil Canyon Corridor."]

(d) *Toroweap/Thunder River Flight-Free Zone.* Within an area bounded by line beginning at Lat. 36°22′45″., Long. 112°20′35″W.; thence northeast along the boundary of the Grand Canyon National Park to Lat. 36 15′ 00″N., Long. 113°03′15″W.; to Lat 36°15′00″N., Long. 113°07′10″W.; to Lat. 36°10′30″N., Long 113°07′10″ W.; thence east along the Colorado River to the confluence of Havasu Canyon (Lat. 36°18′40″N., Long. 112°45′45″W.;) including that area within a 1.5-nautical-mile radius of Toroweap Overlook (Lat. 36°12′45″N., Long. 113°03′30″W.); to the point of origin; but not including the following airspace designated as the "Tuckup Corridor": at or above 10,500 feet MSL within 2 nautical miles either side of a line extending between Lat. 36°22′55″N., Long 112°48′50″W. and Lat. 36°17′10″N. Long. 112°48′50″W.; to the point of origin.

Section 5. *Minimum flight altitudes.* Except in an emergency or if otherwise necessary for safety of flight, or unless otherwise authorized by the Flight Standards District Office for a purpose listed in Section 3(b), no person may operate an aircraft in the Special Flight Rules Area at an altitude lower than the following:

(a) Eastern section from Lees Ferry to North Canyon: 5,000 feet MSL.

(b) Eastern section from North Canyon to Boundary Ridge: 6,000 feet MSL.

(c) Boundary Ridge to Supai (Yumtheska) Point: 7,500 feet MSL.

(d) Supai Point to Diamond Creek: 6,500 feet MSL.

(e) Western section from Diamond Creek to the Grand Wash Cliffs: 5,000 feet MSL.

Section 6. *Commercial sightseeing flights.*

(a) Notwithstanding the provisions of Federal Aviation Regulations § 135.1(b)(2), nonstop sightseeing flights that begin and end at the same airport, are conducted within a 25-statute-mile radius of that airport, and operate in or through the Special Flight Rules Area during any portion of the flight are governed by the provisions of Part 135.

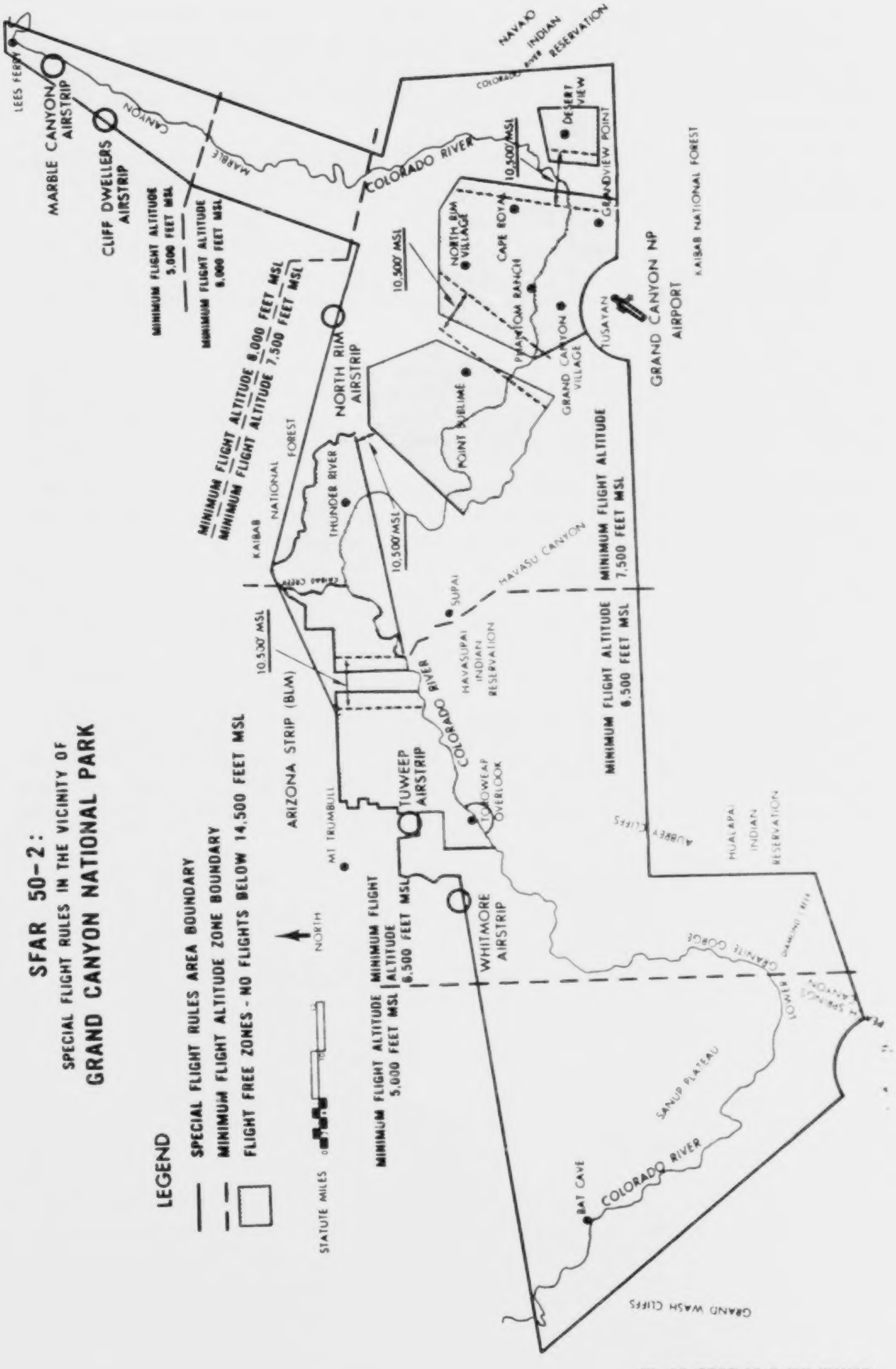
(b) No person holding or required to hold an operating certificate under Part 135 may operate an aircraft in the Special Flight Rules Area except as authorized by operations specifications issued under that part.

Section 7. *Minimum terrain clearance.* Except in an emergency, when necessary for takeoff or landing, or unless authorized by the Flight Standards District Office for a purpose listed in Section 3(b), no person may operate an aircraft within 500 feet of any terrain or structure located between the north and south rims of the Grand Canyon.

Section 8. *Communications.* Except when in contact with the Grand Canyon National Park Airport Traffic Control Tower during arrival or departure or on a search and rescue mission directed by the U.S. Air Force Rescue Coordination Center, no person may operate an aircraft in the Special Flight Rules Area unless he monitors the appropriate frequency continuously while in that airspace.

Section 9. *Termination date.* This Special Federal Aviation Regulation expires on June 15, 1992.

Authority: 49 U.S.C. 1303, 1348, 1354(a), 1421, and 1422; 16 U.S.C. 228g; P.L. 100-91, August 18, 1987; 49 U.S.C. 106(g) (Revised Pub. L. 97-449, January 12, 1983).]



SFAR 50-2:
SPECIAL FLIGHT RULES IN THE VICINITY OF
GRAND CANYON NATIONAL PARK

LEGEND
SPECIAL FLIGHT RULES AREA BOUNDARY
MINIMUM FLIGHT ALTITUDE ZONE BOUNDARY
FLIGHT FREE ZONES - NO FLIGHTS BELOW 14,500 FEET MSL
STATUTE MILES
NORTH
LEES FERRY
MARBLE CANYON AIRSTRIP
CLIFF DWELLERS AIRSTRIP
MARBLE CANYON
MINIMUM FLIGHT ALTITUDE 5,000 FEET MSL
MINIMUM FLIGHT ALTITUDE 6,000 FEET MSL
MINIMUM FLIGHT ALTITUDE 8,000 FEET MSL
MINIMUM FLIGHT ALTITUDE 7,500 FEET MSL
NAVAJO INDIAN RESERVATION
COLORADO RIVER
DESERT VIEW
GRANDVIEW POINT
10,500' MSL
CAPE ROYAL
NORTH RIM VILLAGE
PHANTOM RANCH
GRAND CANYON VILLAGE
TUSAYAN
GRAND CANYON NP AIRPORT
KAIBAB NATIONAL FOREST
NORTH RIM AIRSTRIP
POINT SUBLIME
THUNDER RIVER
KAIBAB NATIONAL FOREST
KANAB CREEK
HAVASU CANYON
SUPAI
HAVASUPAI INDIAN RESERVATION
MINIMUM FLIGHT ALTITUDE 7,500 FEET MSL
MINIMUM FLIGHT ALTITUDE 6,500 FEET MSL
ARIZONA STRIP (BLM)
TUWEEP AIRSTRIP
TOROWEAP OVERLOOK
MT TRUMBULL
AUBREY CLIFFS
HUALAPAI INDIAN RESERVATION
WHITMORE AIRSTRIP
MINIMUM FLIGHT ALTITUDE 6,500 FEET MSL
MINIMUM FLIGHT ALTITUDE 5,000 FEET MSL
GRANITE GORGE
DIAMOND CREEK
LOWER GRANITE GORGE
PEACH SPRINGS CANYON
SANUP PLATEAU
BAT CAVE
GRAND WASH CLIFFS

Special Federal Aviation Regulation 52

Extension of Compliance Date for Certain Large Airplanes Operated Under Part 135, in Other Than Commuter Air Carrier Operations, to Comply with Pending Seat Cushion Flammability Regulation

Adopted: November 25, 1987 **Effective: December 2, 1987**

(Published in 52 FR 45910, December 2, 1987)

SUMMARY: This rule extends the compliance date for 90 days, from November 26, 1987, to February 24, 1988, for the requirements in the Federal Aviation Regulations pertaining to the installation of fire-retardant seat cushions in large airplanes operated under Part 135 by on-demand and commercial (unscheduled) operators. This extension has been found to be necessary as a result of several petitions for exemption, and public comment thereon, recently submitted to the FAA. These petitions indicate that some operators failed to take timely action to install the required cushions in certain airplanes by the specified compliance date and that such compliance by these and other operators will be delayed by the unavailability of the necessary seat cushions and the shortage of seat cushion installers available to perform the seat cushion modification. This SFAR extends the compliance date for the affected operators to prevent any possible disruption in passenger service likely to result due to the time the FAA would need to dispose of pending petitions for exemptions prior to the November 26, 1987, compliance date.

Comments must be received on or before January 4, 1988.

ADDRESS: Mail or deliver comments on this rule in duplicate to: Federal Aviation Administration, Office of the Chief Counsel, Attention: Rules Docket (AGC-204), Docket No. 25477, Room 915-G, 800 Independence Avenue S.W., Washington, DC 20591. Comments may be examined in the Rules Docket weekdays, except Federal holidays, between 8:30 a.m. and 5 p.m.

FOR FURTHER INFORMATION CONTACT: Mr. Henri P. Branting, Technical Analysis Branch, Aircraft Engineering Division, AWS-100, Office of Airworthiness, Federal Aviation Administration, 800 Independence Avenue, S.W., Washington, D.C. 20591, telephone (202) 267-9577.

SUPPLEMENTARY INFORMATION:

Background

This SFAR was developed in response to several petitions for exemption from requirements in Federal Aviation Regulations (FAR) § 121.312 on behalf of nonscheduled air taxis and commercial operators. Notices soliciting public comments on petitions for exemption were published in the *Federal Register*. This SFAR is based on both the comments contained in those petitions and the public responses to the notices of the petitions. These comments are reviewed below in the "Discussion of Petitions and Comments." Dockets containing the petitions and public comments are maintained in the FAA Rules Docket, Room 915-G, 800 Independence Avenue, S.W., Washington, D.C. 20591. The petitions and comments may be examined in Room 915-G weekdays, except Federal holidays, between 8:30 a.m. and 5:00 p.m.

For the most part, the petitioners are, or represent, nonscheduled operators of small transport category airplanes operating under Part 135. These petitioners seek exemptions, to varying extents, from the requirements in the FAR pertaining to the fire resistance of aircraft seat cushions as applicable to large airplanes operated under Part 135. Part 135 of the FAR, which prescribes the operating rules governing air taxi and commercial operators, applies to both small airplanes carrying not more than 19 passengers and large airplanes carrying not more than 30 passengers. (Part 1 defines a small aircraft as one having a maximum certificated takeoff weight of 12,500 pounds or less, and a large aircraft as one having a maximum certificated takeoff weight greater than 12,500 pounds.) Special Federal Aviation Regulation 38-2 (50 FR 23944; June 7, 1985), "Certification and Operating Requirements" defines "scheduled operations" and "commuter air carriers." Special Federal Aviation Regulation No. 52 is applicable to all other operators of large aircraft under Part 135.

Part 135 was substantially revised and reissued on September 26, 1978 (43 FR 46742; October 10, 1978), in conjunction with Amendment 121-147 as part of a major program to upgrade the level of safety for operations conducted by commuter air carriers, on-demand air taxi operators, and commercial operators. The revision of Part 135 also recognized the need for greater operational flexibility in the size of aircraft operated under that part. The revision to Part 135 raised the size limit of aircraft used in common carriage to those having a maximum passenger seating configuration of 30 seats or less and a maximum payload capacity of 7,500 pounds or less. Larger aircraft operated by a Part 135 certificate holder are required to be operated in accordance with Part 121. Because this revision allowed certificate holders to operate larger and more complex aircraft capable of flying higher and faster with increased passenger loads, the revised Part 135 incorporated changes necessary to deal with the operation of these larger, more complex aircraft. Sections 135.169 and 135.177 were adopted in the revised Part 135 to require that certain airworthiness provisions for large airplanes operated under Part 135 be maintained at a level consistent with those larger airplanes operated under Part 121. These provisions include cargo compartment fire protection, engine fire protection, emergency evacuation equipment, fire resistance of materials used in compartment interiors, and numerous other airworthiness features. Section 135.169, by specific cross-reference to Part 121, requires that large airplanes operated under Part 135 meet the airworthiness requirements of § 121.213 through § 121.283, § 121.307, and § 121.312. Section 121.312 establishes the requirements for compartment interior materials.

Amendment 121-184, issued October 23, 1984 (49 FR 43188, October 26, 1984), revised § 121.312 to raise substantially the level of passenger protection against both in-flight and post-crash fires. That rulemaking was initiated as a result of investigations of aircraft cabin fires, which indicated that additional measures were needed to enhance protection against such fires. Section 121.312, as revised, requires the installation of highly fire-resistant seat cushions, commonly referred to as fire-blocked cushions, in the cabins of all airplanes, operating under Part 121, which were type certificated after January 1, 1958. The amendment requires that the installation be completed on or before November 26, 1987. Through the use of fire-blocked cushions, that amendment greatly reduces one of the major potential sources of flammable material in a cabin fire, the foam used in the construction of seat cushions.

To facilitate the implementation of the new requirement, the FAA issued a general notice (GENOT) in May 1985 to all air carrier inspectors, outlining administrative procedures pertaining to findings of compliance. It was pointed out in the GENOT that the applicability of the requirement includes those Part 135 airplanes subject to § 121.312 by reference in § 135.169. This information was available to operators during the early stages of the compliance period. In addition, following a period of notice and public comment, Advisory Circular 25.853-1, Flammability Requirements for Aircraft Seat Cushions, was published September 17, 1986, providing additional information regarding the test procedures specified in the regulation and explaining that the requirement is applicable to airplanes under § 135.169. The pending completion of the fleet upgrading with new fire-blocking cushions exemplifies the firm commitment by industry to a major safety challenge. Within a period of 3 years, the air carrier industry has successfully adapted substantially new technology, materials, and testing methodology to the retrofit of a half-million seats currently in airline service. The SFAR will not effect aircraft operated under Part 121. This is a major tangible improvement in aviation safety.

DISCUSSION

This SFAR extends the compliance date for only a small fraction of seats now in service. The airplanes covered by this SFAR typically seat less than 20 passengers. The FAA estimates that approximately two-thirds of the Part 135 fleet is in full compliance. With ongoing compliance in progress, firm figures regarding the precise number of seats not in compliance are not available. However, the FAA believes that those seats affected by this SFAR would be well less than 4 percent of the total in service.

The FAA has received numerous petitions requesting that the November 26, 1987, compliance date for § 121.312 be extended by varying amounts up to several years, and that Docket No. 23791 pertaining to Amendment 121-184 be reopened for comments from the affected Part 135 operators and the general public. A meeting between the FAA and representatives of one of the petitioners (National Air Transportation Association) was held on October 29, 1987, during which they reemphasized the data submitted with their petition (see Docket No. 25260).

The principal contention offered in support of the petitions is that, for various reasons, many on-demand air carrriers operating under Part 135 generally did not become aware until recently that the new seat cushion requirements are applicable to large airplanes operated under Part 135. They say that Amendment 121-184 does not specifically mention applicability of the rule to large airplanes operated under Part 135. They also contend that the preamble of Notice of Proposed Rulemaking 83-14 (48 FR 46250; October 11, 1983), on which Amendment 121-184 is based, was not sufficiently clear in regard to applicability of the proposed requirements and did not specifically invite Part 135 operators of large airplanes to comment on the proposed rule. As a result, they say that Part 135 operators of large airplanes were not effectively put on notice that they were expected to comply with Amendment 121-184. Several commenters responding to the public notices of the petitions expressed agreement and support of these contentions. While the preambles of Notice 83-14 and Amendment 121-184 did not call attention specifically to the Part 135 applicability, the wording of both the proposed and final rules is clear. There was no indication in the notice or amendment of any intent to change the standing applicability of airworthiness requirements in Part 121 to large airplanes operated under Part 135, as delineated in §§ 135.169 and 135.177. Parties concerned with the operation of large airplanes under Part 135 did respond to Notice 83-14 and provide comments. While a number of comments concerned the applicability of the proposed seat cushion requirements to smaller transport airplanes, such as those seating less than 44 passengers, no commenter questioned the applicability of the requirements to a certain type of operation. This is discussed in the preamble of Amendment 121-184. The 4-month comment period of Notice 83-14, therefore, provided ample opportunity for anyone to request clarification of any aspect of the proposed rule not clearly understood.

A compliance survey recently taken by the FAA of Part 135 scheduled operators indicates that most operators apparently have understood the applicability of the requirements for some time and they either have placed their airplanes in compliance or plan to meet the November 26, 1987, compliance date. In fact, the FAA is informed that at, this time, the majority of airplanes operated by members of the Regional Airline Association in Part 135 commuter operations are already in compliance with the new seat cushion flammability requirements. Some operators have no plans for meeting the compliance date and indicate that certain airplanes might be removed from Part 135 service if they are not properly modified by the compliance date.

Several petitioners and commenters contend that characteristics of smaller transport airplanes reduce the need for fire-retardant cushions. They point out that small transports have a ratio of passengers to exits considerably less than larger transports and can be evacuated more quickly. Also, the smaller cabins are less critical from the standpoint of fire protection. These basic issues were taken into consideration in the adoption of Amendment 121-184, with the conclusion that the use of highly fire-resistant cushions is an improvement in cabin fire safety, which is warranted for transport airplanes regardless of size.

Several petitioners and commenters contend that conditions unique to the operation of small transport airplanes raise practical and economic problems, which make timely compliance difficult. They contend that the economic service life of a seat in a small transport typically is longer than that of an airline passenger seat and that the compliance date should be extended to recognize this and alleviate the economic burden. They point out that seats in small transports often are of individualized or custom design and present problems in obtaining specimens for compliance testing. They also point out that the small number of seats involved in compliance testing and modification, as compared with airline operations, does not afford the ready access to testing and modification services and results in delays in compliance.

While the FAA does not agree that Part 135 operators received inadequate notice of the proposed and final application of § 121.312 to their operations, we do recognize a practical compliance problem for on-demand Part 135 operators, which, at this point, can be most effectively addressed through a 90-day extension of the compliance date. Operators unable to achieve compliance within the 90-day extension of the compliance date may obtain approval for a compliance plan extending the compliance date beyond February 24, 1988. In order to obtain written approval of an additional extension of the compliance date, operators must, not later than January 25, 1988, provide the Administrator with an acceptable compliance plan. The compliance plan must be forwarded to the Director of Airworthiness (AWS-1, 800 Independence Avenue, S.W., Washington, DC, 20591). The plan must establish that compliance cannot be achieved by February 24, 1988, by providing evidence of good faith efforts to secure the necessary seat materials, modification and installation services, and require tests and certifications thereof. The compliance plan must indicate the anticipated compliance date and be supported by correspondence or other evidence to establish that firm arrangements to accomplish compliance exist. If the compliance plan is acceptable, the FAA will notify each operator in writing. At this time, the FAA knows of no circumstances under which it could approve a compliance plan substantially longer than 90 days.

The petitions for exemption, and comments thereon, indicate that the practical compliance problems being encountered by some operators have become more acute than anticipated in the promulgation of the rule. It also appears that the situation of some operators is the result of their own delay in initiating compliance. In either case, there is a clear indication that the necessary equipment modification cannot be accomplished in a timely manner unless additional time is provided to certain operators where warranted.

There are a limited number of facilities in the United States that can perform fire-blocking seat cushion modification and testing for aircraft. Many of these facilities are unavailable to perform seat cushion refurbishment and testing prior to the compliance deadline, even on an overtime basis, due to a large backlog of aircraft currently undergoing or awaiting modification. The airplanes operated under Part 135, which are subject to this SFAR, pose unique problems from the standpoint of seat cushion compliance testing. Due to the wide variety of airplane models and individual seat designs involved, the retrofit of these airplanes is test intensive, requiring a greater number of individual compliance tests for a given seat population. This has made the task of compliance testing more critical for the Part 135 operators, because it acutely taxes the available seat materials testing resources. Because the preponderance of compliance testing and seat modification for the air carrier fleet in general will have been completed by November 26, 1987, access to and availability of these services will be greatly improved for Part 135 operators after that date. Notwithstanding the fact that failure to comply would be the result of unexcusable delay on the part of some operators, the FAA finds that it would not be in the public interest to allow the possible disruption of passenger service for this segment of the industry that could result if these aircraft were grounded. From the outset, the basic objective of the fire-blocking regulatory program has been, to the extent possible, to achieve a major fleetwide improvement in cabin fire safety through mutual government and industry cooperation. The compliance extension provided by this SFAR is consistent with that objective.

GOOD CAUSE JUSTIFICATION FOR IMMEDIATE ADOPTION

This SFAR is being adopted without issuance of a notice of proposed rulemaking, because delay could have a significant impact on passenger service without increasing the level of safety. Public comments on the same basic issues raised by this SFAR were obtained in response to the recent notifications in the *Federal Register* of the petitions for exemption. Those petitions for exemption, and the comments thereon, indicated an impending compliance problem of previously unknown magnitude, which could not be addressed practicably or in a timely manner through the exemption process. Issuance of a notice of proposed rulemaking in this case would delay final rule adoption and burden the resources of operators by reducing available lead time for compliance planning. For these reasons, the FAA has concluded that notice and [illegible] for public comment are impracticable, and good cause exists for making this amendment effective in less than 30 days.

Whether through their own delay or because of a lack of available technical support, several operators are confronting problems in complying with the seat cushion requirements before the compliance deadline and other operators may likely experience similar problems. Noncompliance would mean that airplanes would be removed from Part 135 service until compliance is accomplished. To avoid widespread disruption of passenger service, the FAA agrees that the compliance date should be extended by 90 days. However, interested persons are invited to submit such comments as they may desire regarding this amendment. Communications should identify the docket number and be submitted in duplicate to the address above. All communications received on or before the close of the comment period will be considered by the Administrator. After review of the comments, if the FAA finds that changes are appropriate, it will initiate rulemaking proceedings to amend the regulations. All comments will be available, both before and after the closing date for comments, in the Rules Docket for examination by interested parties.

ECONOMIC SUMMARY

The following is a summary of the regulatory evaluation of an SFAR that extends the existing compliance date for 90 days for installation of fire-retardant seat cushions, as required in FAR, § 121.312, in airplanes operated by on-demand and commercial operators under Part 135. The deadline would be extended from November 26, 1987, to February 24, 1988, under this SFAR.

Virtually all seats in commercially-operated aircraft (including aircraft operated under Part 121 and Part 135) will be in compliance with § 121.312 by November 26, 1987. Recent estimates indicate that approximately 500,000 seat cushions have been replaced or refurbished with fire-blocking material. An FAA survey taken in August 1987 indicated that approximately two-thirds of Part 135 aircraft are expected to be in compliance by November 26, 1987. The FAA estimates that the seating capacity of the Part 135 aircraft not in compliance is less than 20,000 seats, or no more that 4 percent of the total number of seats in commercially-operated aircraft. This SFAR is expected to affect less than this.

This rulemaking addresses several petitions for exemption recently submitted to the FAA by Part 135 certificate holders, which indicate that factors unique to certain large aircraft operating as on-demand commuter air carriers under Part 135 may prevent the installation of fire-retardant seat cushions by the specified deadline. These factors include a large backlog of aircraft in seat modification facilities, and high per-seat testing and modification costs due to the small number of seats in the affected Part 135 aircraft. The rule would extend the compliance schedule for 90 days to allow the facilities that can perform fire-blocking seat cushion modifications to eliminate their backlog of aircraft awaiting modification and schedule new orders.

Presently, it is unlikely that many aircraft operators who have not yet installed or equipped their aircraft with fire-blocking seats will be able to do so by the November 26, 1987, compliance deadline. There are a limited number of facilities in the United States that can perform fire-blocked seat cushion modification and testing for aircraft. Many of these facilities are unavailable to perform seat cushion refurbishment or replacement and testing prior to the compliance deadline, even on an overtime basis, due to a backlog of aircraft currently undergoing or awaiting modification. Therefore, at this time, it will not be possible for many Part 135 operators to have their aircraft equipped with fire-blocking seat cushions by the November 26, 1987, deadline.

The SFAR will not reduce the existing level of safety for the traveling public, but will ensure that on-demand air carriers operating under Part 135 will have the necessary time to install fire-blocking seats, to bring their aircraft into compliance with the enhanced safety levels mandated by § 121.312. This rule will result in unquantifiable benefits for some Part 135 certificate holders by extending the compliance deadline for 90 days, which will allow operators additional time to modify their aircraft, rather than removing them from service. The existing level of safety will not be decreased by this rule, and thus, no additional cost will be imposed on the traveling public or aircraft operators.

Regulatory Flexibility Determination

The FAA has determined that, under the criteria of the Regulatory Flexibility Act of 1980, the extension of the compliance date for 90 days will not have a significant economic impact on a substantial number of small entities. The majority of small entities affected by this regulation represent on-demand operators of Part 135 aircraft, which will be allowed additional time to comply with existing requirements. No additional cost is imposed on Part 135 operators who have already installed fire-retardant seats. Small testing and aircraft modification facilities that install fire-blocking seats are also not significantly affected, since the compliance deadline is extended, but not eliminated under the SFAR, and all affected aircraft must still undergo modification by February 24, 1988.

Trade Impact Assessment

This rule primarily affects domestic on-demand commuter air carriers operating under the rules of Part 135. The regulation, if adopted, would have little or no impact on trade opportunities for U.S. firms doing business overseas or for foreign firms doing business in the United States.

CONCLUSION

This amendment extends the compliance date for 90 days from November 26, 1987, to February 24, 1988, for the requirement in the FAR pertaining to the installation of fire-retardent seat cushions in on-demand and commercial operators operating under Part 135. Because this amendment will not result in an annual effect on the economy of $100 million or more or a major increase in costs for consumers, industry, or Federal, State, or local government agencies, it has been determined that this is not a major amendment under Executive Order 12291. In addition, the amendment will have little or no impact on trade opportunities for U.S. firms doing business overseas or for foreign firms doing business in the United States.

Since the amendment concerns a matter on which there is a substantial public interest, the FAA has determined that this action is significant under Department of Transportation Regulatory Policies and Procedures (44 FR 11034; February 26, 1979). In addition, as noted above, the FAA certifies that under the criteria of the Regulatory Flexibility Act, this amendment will not have a significant economic impact, positive or negative, on a substantial number of small entities.

A regulatory evaluation of the amendment, including a Regulatory Flexibility determination and Trade Impact Assessment, has been placed in the regulatory docket. A copy may be obtained by contacting the person identified under "FOR FURTHER INFORMATION CONTACT."

THE AMENDMENT

Accordingly, Parts 121 and 135 of the Federal Aviation Regulations (14 CFR Parts 121 and 135) are amended effective December 2, 1987.

The authority citation for Part 135 continues to read as follows: Authority: 49 U.S.C. 1354(a), 1355(a), 1421 through 1431, and 1502; 49 U.S.C. 106(g) (Revised Pub. L. 97-449, January 12, 1983).

SFAR NO. 52—Extension of Compliance Date of Seat Cushion Flammability Regulation for Large Airplanes Operated Under Part 135 in Other Than Commuter Air Carrier Operations

[Contrary provisions of §§ 121.312 and 135.169 of this chapter notwithstanding, for airplanes type certificated after January 1, 1958, after February 24, 1988, seat cushions in any compartment occupied by crew or passengers (except those on flight crewmember seats) in large airplanes operated under Part 135 of this chapter, except large airplanes used in commuter air carrier operations, must comply with the requirements Pertaining to fire protection of seat cushions in § 25.853(c), effective November 26, 1984, and Appendix F to Part 25 of this chapter, effective November 26, 1984, unless an alternative compliance plan has been approved by the Administrator.

For airplanes type certificated after January 1, 1958, after November 26, 1987, seat cushions in any compartment occupied by crew or passengers (except those on flight crewmember seats) in large airplanes operated under Part 135 of this chapter and used in commuter air carrier operations must comply with the requirements pertaining to fire protection of seat cushions in § 25.853(c), effective November 26, 1984, and Appendix F to Part 25 of this chapter, effective November 26, 1984.

This Special Federal Aviation Regulation terminates on December 1, 1988.]

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